CHEMICAL MARKETS

RUPERT C. WATSON
Managing Editor

WILLIAMS HAYNES, Publisher

ELMER F. SHEETS
Assistant Editor

VOLUME XXII | ESTABLISHED 1914 | NUMBER 5

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Consulting Editors:

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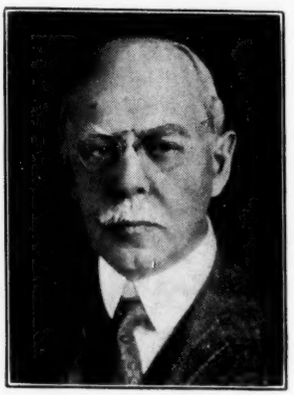

Arthur D. Little was trained at Massachusetts Institute of Technology; engaged in chemical consulting since 1886 prominently identified with development of new processes for paper, rayon, chrome tanning, lacquer, petroleum solvent and other industries; consultant to the War Department on airplane dopes, acetone production, and smoke filters; chairman, Advisory Committee, Chemical Exposition; Member, National Research Council, and past president of both American Chemical Society and American Institute of Chemical Engineers.

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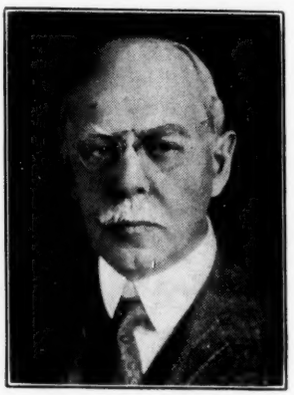

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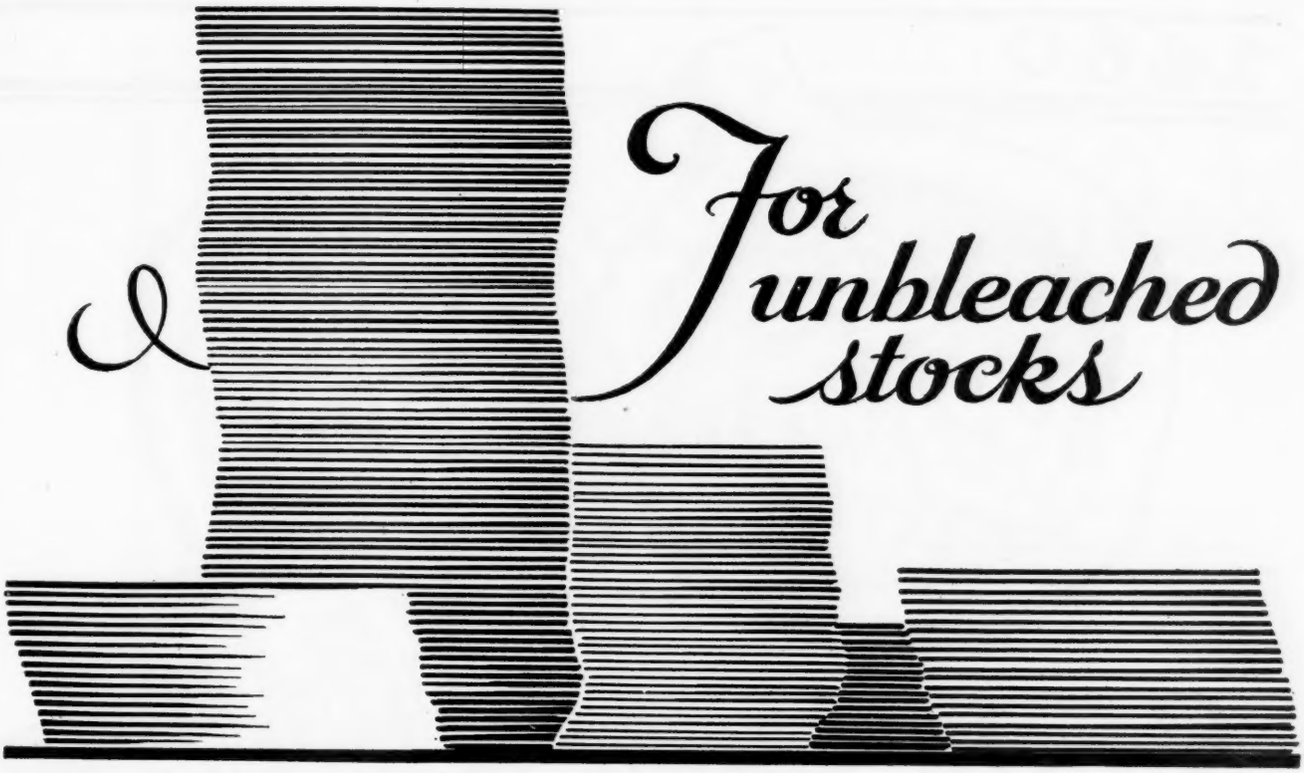

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CHEMICAL MARKETS

VOL. XXII. MAY, 1928 No. 5.

Misunderstandings and Motives

MANY gentlemen in Congress appear to have the greatest difficulty in comprehending the meaning of two plain facts in connection with Muscle Shoals. First, that this plant is primarily a power enterprise and that it is fitted badly for the manufacture of fertilizers. Second, that the American fertilizer industry on the whole has not been as profitable a business as it should have been if one-tenth of the stories current about how this wicked trust gouges the poor farmer were true.

THE most casual conversation with both Senators and Representatives reveals astounding ignorance of technical developments in the air nitrogen field which have taken place since the Muscle Shoals project was undertaken. It is commonly believed among them that merely to turn the wheels of this great plant is to grind out at very low cost a completely balanced plant food especially adapted for the needs of the cotton states. Apparently they have never even heard of potash or phosphate. They seek nothing of freight rates on these raw materials, or else they believe —and this is a fact, not exaggeration— that these products are also to be produced at Muscle Shoals.

SUCH a misconception of the chemical situation at this potential power plant is, however, probably very much less dangerous in their consideration of this problem than the possibility either that Muscle Shoals will be used politically or that it will in disgust be settled in any way that appears to aid the farmer. Mr. Hoover's candidacy is not popular on Capitol Hill, and while he has had no connection with the Muscle Shoals problem, nevertheless, it has been noised abroad throughout the agricultural states that he was, to a large measure, responsible for the President's veto of the McNary Haugan Bill. Therefore, some stigma could be attached to the Secretary of Commerce if Mr. Coolidge vetoed, as he would, a Muscle Shoals bill that was economically unsound. Such a political appeal would, unfortunately, get some votes. And a great many more would be cast to enact legislation which would clean the congressional slate of the Muscle Shoals problem.

WITH this last thought the chemical industry is in hearty accord. Muscle Shoals has hung like a sword of Damocles over the struggling fertilizer industry ever since 1920. It has, moreover, had a serious, unfavorable effect upon the development of our air nitrogen industry, sound business and modern technology. To put the Government into the nitrogen business, subsidized by the sale of surplus power, would seriously threaten both of these branches of American chemical enterprises.

Executive Ability

That badly defined, but often discussed mixture of administrative powers and qualities of personal leadership which we sum up in the phrase "executive ability" was never so in demand as in the chemical process industries to-day. It requires a rare combination of almost visionary foresight and practical business experience, of sound judgment and sure decision, of financial acumen, of capable mastery over both materials and men to steer any chemical enterprise successfully through the rapids of our changing industrial conditions.

Whether we like it or not, these demands are inevitably working us further and further away from the old ideal of a chemically trained executive towards the specialist in industrial administration. For better or for worse, it becomes increasingly difficult for the chemist to cross the gulf between laboratory bench and office desk. Such true chemical executives as Nichols, Reese, Whitaker, Dow, Redmond have always been *rara avis*; almost, in the evolution of industrial chemistry, as rare as the great *auk*. Undoubtedly there are incompatible elements in technical skill and executive ability; but as these distinguished exceptions prove they may be fused, and the industry of chemistry has a just criticism of the present methods and aims of our teachers of chemistry for their failure at once to attract and to train young men of the administrative type. This may come—speed the day! —but in the meantime our executive ranks must be recruited, and, for the present business generation at least, the best material is found outside the chemists' group. It is not the logical way, but it is apparently easier to make an American chemical executive out of a good businessman than out of a good chemist.

The dangers that lurk in such a course among industries based upon chemistry are plain. They may be avoided only by the strenuous efforts of our executives themselves, for it will be fatal if the mental attitude of the narrowminded scientist who affects contempt for business should be reflected in shortsighted executives who discount the importance of chemistry.

There died in England recently an army officer who may well serve as a pattern. Col. S. W. H. Rawlins was a type of that well-rounded administrator which the British people so often develop in highly perfect form, and his contribution to the most modern application of chemistry makes him an especially notable model for us. Born of an academic family, he left Eton as a mere boy to serve five years in the Royal Marines before being transferred to the Army. He saw active service in South Africa, in India, in Central Africa, and on the Western Front. He had great linguistic powers and could talk a double score of native dialects chiefly among the Swahili languages. He was an expert in African ethnology and Indian archaeology, a great lover of music; and within his own profession a capital authority on artillery. After the World War he was put in charge of the Experimental Station at Porton where in 1920 the Chemical Warfare Committee had concentrated all experimental work. The development of this station was due largely to Rawlins who bent all his energy and mental powers to this end. Not content to leave the scientific work to his technical subordinates, he so mastered this that when bad health incapacitated the director of experiments, he was himself able to carry on. His example of plunging into the technical aspects of this strictly chemical post is far different from the attitude of those business executives who, when drafted to chemical enterprises, are content to devote their energies solely to financial and merchandizing problems and to remain ignorant of and sometimes even indifferent to the research work and production programs of their organization. While the good executive turned into a poor chemist would be a sorry spectacle, nevertheless, those very qualities of administrative ability and leadership which he possesses should enable him to meet the technical and engineering staffs more than half way in a sympathetic and intelligent apprehension of the importance of their work and the seriousness of their problems.

Hobbies

One of the cherished tenets in the *credo Americana* is that the tired business man has but three relaxations, 1, a Ziegfeld Show (the more it glorifies the American girl, the better); 2, golf (the standardized excuse for combining business with exercise and thus making dollars and keeping fit at one and the same time); 3, poker (the proverbial comic paper reason for the detained-at-the-office excuse).

So far as the chemical industry is concerned this is a false promise, for the hobbies, as recorded in our Who's Who column, reveal a startling absence of "first nighters" and there are actually as many gardners and golfers. Poker, significantly or not, is extremely conspicuous by its absence. The collecting of

postage stamps, on the other hand, is a rather unexpectedly high favorite. Motoring, fishing, and hunting, in the order named have many followers, and there are plenty who confess to a catholic love of the outdoors and all sports in general. Among the "curiosities" is one who breeds fancy pigeons—there are plenty of dog fanciers—another who collects pipes; one rejoices in "transcontinental automobile racing"; and another to "persecuting any and all forms of Babbittism wherever it appears." Somehow we are a wee bit suspicious of that last hobby, as we are of "my work." Neither Mr. Mencken nor Mr. Lewis appear to us to be quite the ideal type of playmaster and games' rules drawn from copybook maxims fail to rouse much enthusiasm among the average chemical executive as we have come to know him in school and out.

The Latest Consolidation

The American chemical industry, in fact, the country as a whole, was somewhat startled by the announcement a few weeks ago of the formation of The Finance Corporation of Great Britain and America, Limited. The deal has been sponsored by Sir Alfred Mond and Sir Harry McGowan in the name of Imperial Chemical Industries, Ltd., and by the Chase Securities Corporation of New York.

While the statement accompanying the announcement of the formation rather hazily sets forth the function of the new organization as that of "systematic co-operation of leading financial and industrial brains of both countries for the development of industries either already established or of new ideas which are brought forth," the feeling persists that the apparent failure of negotiations between Imperial Chemical Industries and members of the European cartel, played no minor role in this amalgamation of Chemical England with Financial America.

Commenting editorially in a favorable manner on the new enterprise *Chemical Age* of London says in part:

"There are several grounds on which this Anglo-American merger may be regarded in a favorable light. Its effect on the political and general relations of the two countries is bound to be good, because of the alliance of the powerful commercial and financial interests involved, and of the more intimate understanding and intercourse which its work must necessarily bring about. American official opinion in London is said to welcome the agreement. Apart from its general beneficial effects on international relations, it definitely disposes of the dangerous idea which was held and freely expressed by large chemical interests in the United States, such as the Chemical Foundation, that the existence of Imperial Chemical Industries and the large scale of its operations implied some vague menace towards America. A feeling of this kind, if allowed to develop, might have unfortunate results, and it is well that it should be finally dispersed by a definite commercial agreement of the importance of the one just reached."

The past month has witnessed the conclusion of a long drawn out legal battle over the validity of the Weiss patent on diphenylguanidine in the case of Corona Cord Tire Company versus Dovan Chemical Corporation.

Following a decision and revised decision in minor courts the case was finally appealed before the United States Supreme Court, which ruled that six claims of the Weiss patent were invalid.

This immediately precipitated a price decline of nearly 50 per cent.—the most drastic of the year in the entire chemical group—and with four or five manufacturers now in a position to produce independently a new price level has undoubtedly been established.

ALREADY HAVE MORE'N WE KNOW WHAT TO DO WITH

NICE POWER DAM AND IRRIGATION PROJECT
250 MILES FROM ANTHRACITE AND ONLY
125 MILLION $
BOULDER DAM PROJECT
MUSCLE SHOALS DAM

—*New York Herald-Tribune.*

They Say:——

The tendency of Congress to legislate for the wrong reasons and from the wrong angle is something which every class in the country has painfully experienced at some time. It is at its best when it is cutting its coat according to its cloth. It is at its worst when it is embarking upon large expenditures of money without any real recognition of the ultimate extent of those expenditures or the possibility of withdrawing from an unsuccessful adventure.—*Wall Street Journal.*

The so-called profitless prosperity of 1927, of which we sometimes hear such bitter complaint, and the recession in general activity during the last half of the year, was not accompanied by the over-extension of bank loans, the frozen credits and the distress sales of commodities which so seriously disrupt the business structure and destroy confidence in the future.—*Industrial Digest.*

Evidence continues to accumulate that agriculture especially in the South is slowly but surely improving. We know that here and there individual farmers and communities are steadily advancing, although many will yet have a hard row to hoe before well-rounded agricultural prosperity can be seen throughout the country.—*Manufacturers Record.*

Distribution is the least understood of any factor involved in the labor of getting raw materials fabricated and into the hands of the ultimate consumer. It is a species of maverick we don't seem to be able to hog-tie and brand.—*E. P. Lynch, Pres., Nat'l. Assn. Paint Distributors.*

The increasing volume of capital investment of American interests outside the borders of the United States and on the continent of Europe has often been commented upon, and is a new feature in financial centers since the war.—*Sir Alfred Mond.*

It is only natural that Europe which suffered most from the War, should be the slowest in gathering headway for recovery. In our eagerness to get ahead, we must not be impatient at Europe's lower rate of progress.—*James A. Farrell.*

The average business man is better informed, more alert and his study of conditions has already had its influence in reducing fluctuations, in making reactions less severe and prosperity more sane.—*Guardian Trust Co., Cleveland.*

Successful industrial management in the future is going to depend more and more upon management of men rather than upon the organization of machines. —*Charles M. Schwab.*

The chemical age has arrived. Nothing could be more clear. In many ways it will overshadow the electrical era that has brought about such an astonishing rise in the standard of living.—*Floyd W. Parsons.*

"Good will is the keystone of the arch of all successful human endeavor, and if we keep this in mind and play the game like good sports, there need be no serious worry about the future."—*Keister.*

A problem inadequately visioned cannot be adequately solved.—*Sen. David I. Walsh.*

Ten Years Ago

(From "Drug & Chemical Markets", May 1918)

Chemists' Club, New York, holds its annual election May 1, and the following were installed in office: Ellwood Hendrick, pres.; Chas. H. Herty, vice-pres.; Chas. L. Parsons, non-res. vice-pres.; J. R. M. Klotz, secretary and H. M. Toch, treasurer.

Contracts have been placed by the Ordnance Dept. for 6,000,000 pounds monthly and 3,000,000 pounds monthly of picric acid with Butterworth-Judson Corp. and E. M. Davis Chemical Corp., respectively.

The Government has decided to build nitrate plants at Toledo and Elizabeth, Ohio. The combined capacity of these plants will equal that of the plant now under construction at Sheffield, Ala.

Samson Rosenblatt gets judgment against D. Shor Co., to the amount of $1,067 for damages on a contract for saffron, which plaintiff claims consisted to some extent of granulated sugar.

An order has been issued by Mayor of Newark, N. J. to force the closing of Butterworth-Judson plant, because of fumes emitted in making picric acid under Government contract.

Claim of Union Sulphur Co. against Freeport Sulphur Co. that the latter on Union's patent for sulfur extraction in Louisiana has been upheld by U. S. District Court of Delaware.

Kuttroff, Pickhardt & Co., Inc., has been organized to deal in dyestuffs, chemicals and colors. The new corporation has purchased the stocks of the Badische Co., New York.

Bon Air Coal & Iron Corp., Nashville, will build a wood chemicals plant at Lyles, Tenn., to supply the Government with methyl alcohol and acetate of lime.

British-American Chemical Co., plans enlargement of Ridgefield Park, N. J. plant at cost of $1,500,000 to handle Government contracts.

Gustavus Ober, G. Ober & Sons Co., Baltimore, dies of heart disease on train while enroute to visit his four sons at Camp Lee, Va.

Application has been made to have the property of Federal Dyestuff & Chemical Co. sold under foreclosure.

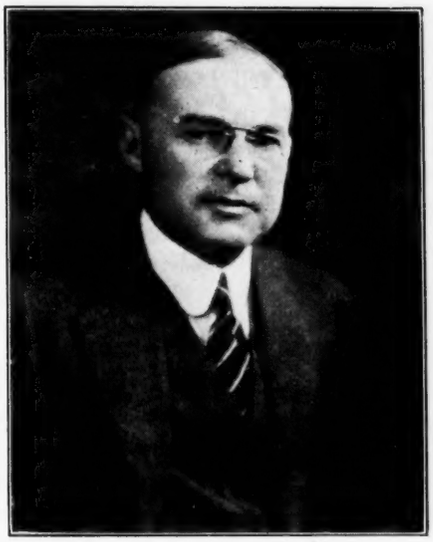
Does Price Cutting Work To The Buyer's Interest?

By Charles F. Abbott*

Executive Director, American Institute of Steel Construction

"THE rising tide lifts all ships", used to be an accepted axiom of the business world. During periods of active business, practically all organizations except the markedly inefficient could depend upon enjoying a share of the general prosperity. To-day the axiom no longer holds, and there we have one of the most significant differences between the present period and those other prosperous periods which have preceded it.

Considered from most angles, the last few years have been markedly prosperous. Wages have been good. The purchasing power of the public has been maintained at a high level. The volume of sales has been satisfactory. Why, then, did we average 2,000 business failures a month all through 1927? Why do we find adequate profits monopolized by a comparatively small number of organizations, while the rank and file struggle along in a welter of red-ink figures, passed dividends, and clamorous complaints about profitless prosperity?



Active participation by the purchasing agent in assisting the raw material industries in their problem of stamping out price cutting, looms as a possible solution of this greatest of present day industrial abuses.

Much of the responsibility for both situations can, I believe, be placed squarely upon the selfish desire to obtain all the business in sight. Business men seem to have lost all sense of proportion in a wild scramble to maintain volume at any price. The idea seems to be to keep your competitor from getting any business at all. Compared with conditions before the war, this might be termed the flapper age of industry. We are controlled by the emotions of jazz.

Greed for volume, without due attention to costs and profit, leads directly to price-cutting. Price-cutting leads directly to rancorous, cut-throat competition, and to the obliteration of all semblance of salesmanship. In a number of our key industries there is actually severe trade depression due largely to the practice of slashing prices to meet the terms of competitors who are expert slashers themselves. The whole thing is a vicious circle and if the tendency continues at its present rate it threatens to develop into trade prostration of the worst kind.

The aggregate net income of 385 important rails, industrial and utility corporations was $2,467,000,000 in 1927 compared with $2,570,000,000 in 1926. The decline amounted to more than four per cent. Forty-one of the important industrial concerns reporting, showed either a decrease of fifty per cent. or more in net income as compared with 1926, or showed a deficit as compared with a net profit in 1926.

Laurence H. Sloan, Managing Editor, Standard Statistics Company, Inc., who is the authority for the above figures, classifies these forty-one concerns according to industries, and attributes the decline in profits to the various responsible factors. In six out of the ten industries listed, lower prices is given as one of the basic causes of the shrinkage.

The predicament in which the seller finds himself as a result of inadequate prices is an exceedingly uncomfortable one, but is there any reason why the buyer should be particularly worried about the price-cutting activities of the organizations from which he buys? If these organizations want to commit suicide by supplying him with materials at less than cost is there any reason why he should be concerned? Is there any reason why he should not take the fullest possible advantage of a buyer's market while such a market exists?

*Address before New England Purchasing Agents Association, Boston, April 9, 1928.

The old fashioned purchasing agent would have answered "No" to both of these questions without the slightest hesitation. Practically his sole concern was with price. His tactics were limited to a question and a protest. The first question he put to the salesman invariably was "What's your price ?" The form of the protest was equally invariable: "Too much. Go home and sharpen your pencil. Then come back and maybe we can talk business."

The Bell Telephone System was one of the first large organizations in the country to lift some of the emphasis from price and place it on those other factors where it belonged. Price remained important, but even more consideration was given to the twin elements of quality and service.

The advantages of the shift quickly became so apparent that a number of other organizations fell into line. Their purchasing agents were lifted from their former positions as official hagglers, and were turned into purchasing engineers whose duties include the study of fundamental factors that control price movements and underlie the production of raw and semi-finished materials.

Quality First Requisite

With these concerns constantly increasing in number, price began to lose its position as the primary consideration. The elements of purchasing were listed, in the order of their importance, as: quality, service, price. It was recognized that price in itself is no guarantee of either of the first two elements. Buyers began to see that to permit price to become the decisive factor in the purchase of a commodity is as unsound as it would be to engage an attorney or a doctor on the price basis.

Some time ago I received a letter from W. L. Chandler, former Secretary of the National Association of Purchasing Agents. Expressing himself as an individual and not as an officer of the Association, Mr. Chandler wrote, in part, as follows:

> "I believe that when two men are doing business together, each must be governed in his opinions and actions by the conditions he finds in the minds of the other.
>
> "If one, we will say the seller, is of the trading disposition, the buyer is going to meet him on his own ground if he wants his material, but if the buyer discovers that he is not quoting his best price then there is set up in the mind of that buyer a doubt or wonderment as to what the bottom is and even though he may make a dicker with them, I am satisfied that he will always be wondering whether he really did get the best price that salesman was ready to make.
>
> "I feel satisfied that, on the whole, our members prefer to have a man quote his best price first and stand by his gun. There may be some exceptions, but I think that is a safe rule."

J. H. Leonard, Executive Secretary, Purchasing Agents' Association of New York, and L. F. Boffey, Editor, The Purchasing Agent, have written me to much the same effect. These three expressions of opinion are an encouraging indication of the extent to which the buyer is awakening to a realization that the whole vicious system of price-cutting menaces his own interests as well as those of the seller.

Marked progress has been made in the right direction, but there is still plenty of room for more. Although a growing number of concerns are replacing the haggler with the purchasing engineer, there are innumberable organizations throughout the country where the haggler still reigns supreme and where the purchase is made almost solely upon a price basis.

Many Shortsighted Buyers

Your membership in your association is sufficient evidence that you are in full sympathy with the new tendencies in buying, but I venture to say we would not have to look very far to find plenty of buyers who feel there is no reason why they should not profit from the seller's desire for business by pounding his price down to the lowest possible level, regardless of whether or not he is able to make a profit on the deal.

There is nothing unnatural about such an attitude. At first glance, the buyer seems justified in assuming that, so long as he plays fair with the seller, it is the seller's own fault if he cuts his price to cost or below. I am ready to grant that this is true, and it is not my intention to appeal to the buyer on the score of sympathy for the seller or to invoke any such altruistic sentiments.

Seller Primarily To Blame

The seller is primarily to blame when he indulges in price-cutting. Herbert N. Casson, a recognized leader in sales management and problems of distribution, has characterized the price-cutter in the following words:

> "The price-cutter is worse than a criminal. He is a fool. He not only pulls down the standing of his goods; he not only pulls down his competitors; he pulls down himself and his whole trade. He scuttles the ship in which he, himself, is afloat . . .
>
> "He admits his own failure as a salesman. He admits he has been defeated according to the Marquis of Queensbury rules of business. He admits he cannot win by fighting fair."

No one will attempt to condone the actions of the price-cutter. He, or rather his greed for business, is directly responsible for the ill effects which follow. It must be admitted, however, that the buyer is frequently guilty of what might be called purchaser profiteering, in contrast to the seller profiteering that we experience when demand is abnormally high and supplies are short.

Purchaser profiteering usually takes the form of jockeying one seller against another to force down the price. Each seller, in turn, is told that the buyer would like to give him the business, but that another

bidder's price is lower. The bids are progressively forced down until the man who receives the contract obtains it only at a losing figure. As the practice continues over a period of months or years, all transactions are completed at losing prices and the industry involved is headed for the rocks.

I know of an instance where a prosperous contractor summoned to his office the lowest of ten bidders for the structural steel on a certain job. "Tom," the contractor said, "you and I have been friends for a long time, and I would like you to get the order I am going to place. The other bidders are strangers, but some of them are lower than you. Sharpen your pencil and see if you cannot get your price down within reason."

Tom expressed deep appreciation, dropped his price ten dollars a ton, and left with an 800 ton order, congratulating himself the while on what a wonderful salesman he was. He never learned that he gave away $8,000 to a smart buyer who, after all, was the better salesman. Tom would have obtained the order without making the cut, as he was already the low man.

As you know, the National Association of Purchasing Agents has strongly condemned the subterfuge of pitting one seller against another in this fashion. The seller is, of course, to blame for being too weak-kneed to look the order in the face and say "No", when he is fully aware that it will almost certainly entail a loss. Nevertheless, it is to the interest of the buyer to co-operate with him in eliminating this and other forms of the price-cutting evil which at the present time is proving a heavy handicap to the prosperity of industry as a whole.

Quality and Service Suffer

In the first place, quality and service inevitably suffer when the price is cut below the line of a reasonable profit. The seller is almost irresistibly tempted to resort to substitute materials or inferior workmanship. Deliveries lag. The seller tries in every possible way to repair the mistake he made when he submitted a price based, not on a fair profit upon the transaction, but upon the vicious system of trying to beat out competition.

The buyer does not receive what he ordered. He receives exactly what he pays for—no more and no less. In the end he pays a price much greater than one based upon cost plus a fair profit, while the seller makes another red entry that brings him just so much nearer the bankruptcy court.

Sometimes, it is true, the buyer escapes the penalty. Then it is the ultimate consumer who pays. But business of this kind is built on a foundation of sand. It can never be permanent. Quality, reputation, good will, and all the other business building assets must be thrown overboard for the sake of a quick sale on a price basis.

The story is told of a man who manufactured silver spoons; or rather, they were the sort of spoons that are sometimes called silver. One of the dealers who bought from him was always clamoring for a lower price. The manufacturer explained each time that he could not lower the price unless he put in more lead. Each time the dealer told him to go ahead.

Eventually the dealer wired that he would take a very large consignment of the spoons if the price were cut another ten per cent. The manufacturer wired back that he couldn't cut the price another penny. "Put in more lead," wired the dealer. "Impossible," replied the manufacturer, "the last lot I shipped you was all lead."

Stable Source a Factor

The maintenance of his source of supply is another factor that makes a fair profit for the seller about as important for the buyer as for the seller himself. The wise buyer realizes that unless those who supply him with essential materials are able to make a reasonable profit they will either be forced out of business altogether, or will turn to the production of other materials in the manufacture of which they can employ their capital and brains to better advantage.

The benefits which accrue to the buyer as a result of protecting the seller's interests have been demonstrated repeatedly. In 1917, when the United States entered the World War, it was necessary to build a complete telephone and telegraph system from the front to the ports of entry. An immense amount of widely varying telephone and telegraph materials was needed, and the materials had to be available in the shortest possible time.

It would have been utterly impossible to meet the requirements if the Bell Telephone System had not firmly established a purchasing policy which assured a fair profit to its circle of supply houses, thus encouraging them to keep their organizations in a high state of efficiency. A still earlier demonstration of the wisdom of such a policy was afforded at the time of the San Francisco earthquake. Twelve hours after the disaster, car loads of telephone equipment were rolling towards the devasted city from all parts of the country.

Citing an Example

About a year ago, it was reported that the producers of sheet steel were losing an average of over $8.00 a ton on every ton of sheets turned out in their plants. Think of it! There is an industry, well established, with heavy investments in plant and machinery, and supplying an essential commodity. Business conditions were generally good throughout the country. The market for sheet steel was expanding. Yet the sheet mills were not only unable to operate at a profit; they were forced to operate at a loss. Price-cutting was almost wholly responsible for this condition.

A large part of the product of the sheet steel manufacturers is used in automobiles. The automobile industry is very nearly dependent upon the sheet

steel industry. It is almost impossible to conceive of an automobile without a steel body. If the sheet steel industry were forced out of existence, or if its efficiency were materially reduced, the automobile manufacturers would suffer irreparable injury.

The automobile manufacturers, however, did not hesitate to take advantage of opportunities to obtain quotations below the cost of production. This attitude, coupled with the weakness of the sheet people, resulted in utter price demoralization that shook the stability of the entire sheet steel industry. Fortunately, the automobile manufacturers appear to have realized the suicidal nature of their policy, and they have announced that they are willing to pay a fair price if they can be assured that the first price quoted will be the last.

The One Price Policy

That incident in itself adds tremendous weight to the argument for the one-price policy as opposed to the horse-trading methods involved in price-cutting. When the one-price policy is not adhered to, confidence gives way to suspicion and distrust. The seller is forced into cut-throat competition involving possible ruin to his whole industry. The buyer naturally feels that his judgment may be proved poor, that he may be left holding the bag with a price higher than he might have obtained had he tried a little bargaining.

When the one-price policy is not in effect it is very nearly impossible for the buyer to plan his production intelligently. The attitude of the buyer is well expressed by the irritation of the purchasing agent of one of the largest textile mills during a competitive struggle for the mill's orders. The successful bidder's price, as a result of cut after cut following the initial submission of bids, had been brought from forty-four cents a pound to twenty-two cents. Yet the purchasing agent was far from happy. He bitterly criticized the industry that permitted price conditions which, involving delays and other complications, threw the buyer's production schedule into hopeless confusion.

Price Is Keystone of Success

All that I have said about the admitted disadvantages of price-cutting, from both the buyer's and the seller's point of view, might be offset in the eyes of the buyer if, as a result of price-cutting, he were able to secure materials at a lower cost than his competitor. There is no question but that the success of a concern is vitally affected by the price at which it is able to obtain raw or semi-finished materials.

Before it is possible to prove that price-cutting is thoroughly inimical to the interests of all concerned, it is necessary to show that the practice cannot give the buyer an advantage over his competitors. Such a demonstration is not difficult. It is even possible to show that in obtaining a price concession which may appear to afford such an advantage, the buyer has in reality handicapped himself in meeting competition.

Not long ago a buyer for a large manufacturing concern succeeded in obtaining a cut price that gave him particular delight. It tickled his vanity so much that he talked about it to all the salesmen who called on him during the next month. He advised them to write to their firms and get lower prices so that they could stay in the game.

They took his advice. They got a price even lower than the price which had so tickled the buyer. Then they went to the buyer's competitors and sold them at the lower figure. In other words, the net result of the buyer's shrewdness had been to help his competitors buy their materials at a price well below that which his own concern had paid. Not all buyers would talk so carelessly, but quotations have a remarkable way of leaking out.

Granting that it is sometimes possible to keep a price concession a secret, it is nevertheless true that the salesman who offers one buyer a cut rate will offer his competitor the same cut whenever it is necessary to do so in order to obtain the business. Who profits then ? Neither concern will possess any advantage over the other. But, you may say, each concern has a wider margin between its costs and its sales price.

Price Cutting a Plague

The trouble is that it seldom works out that way. One of the concerns in the industry is practically certain to use the cut price it has been able to obtain on materials to cut its own price. Other organizations will have to follow suit. Price-cutting that started in an intermediate industry is transferred to the buyer's own industry. The final result is lowered prices for all concerned.

Price-cutting is like a plague. It spreads like wildfire and it afflicts all who come in contact with it. The conquest of this plague is a tremendous job for either buyers or sellers to undertake alone. It has been stamped out in some industries, and can be stamped out in others, by sellers acting entirely on their own initiative, but the task is infinitely easier if buyers and sellers act together for the promotion of their common welfare.

The buyer must recognize the essential nature of the function performed by the seller and the threat to the well-being of both buyer and seller which price-cutting, with its constant see page of profits, inevitably entails. The seller must recognize that if he expects the buyer to pay him a fair profit, he owes it to the buyer to cut his costs to the lowest possible level consistent with good quality and good service.

As you all know, within recent years a great number of industries have organized on a co-operative basis. One of the primary objectives of most of these co-operative associations is the lowering of costs through the elimination of waste in production and distribution. I might cite my own industry as an example,

for soon after the organization of the American Institute of Steel Construction in 1921, the structural steel industry set to work to eliminate those wastes which increased the cost of its product.

For many years, due to lack of standardization in the design, fabrication, and erection of structural steel, the buyer had been forced to pay for approximately ten per cent. more steel than was actually required for the proper construction of a building. Obsolete, rule-of-thumb, fireproofing methods added another unnecessary burden of costs.

The Institute's Standard Specification for Structural Steel for Buildings has done away with the first of these sources of waste in over one hundred large cities of the United States and Canada where the specification is in use. The Standard Specification for the Fireproofing of Strutural Steel Buildings was only completed last fall, but as its use spreads it will materially lower the costs of steel construction.

Vague or inconsistent trade terms and definitions used to be a constant source of annoyance to both the buyer and seller of structural steel. Disputes frequently arose which could only be settled by long and costly litigation. The Institute's Code of Standard Practice, governing the purchase and sale of structural steel, is now widely used on both sides of the U. S. Canadian border, and protects the interests of both parties to the contract.

Meeting The Seller Halfway

I have already referred to incidents which show that many buyers are more than ready to meet the seller half way in any move calculated to place the activities of each on a more profitable and generally satisfactory basis. E. E. Shumaker, President, the Victor Talking Machine Company, provides still another striking example of this trend. While purchasing agent of his concern, he acquired a country-wide reputation for fair and considerate dealing with those from whom his company purchased its supplies.

One of Mr. Shumaker's policies was never to take an undue advantage of a contract that would entail a serious loss for the seller because of circumstances which he could not reasonably be expected to have foreseen. The Victor Company's purchases cover a long list of commodities and there are a number of well known concerns that have reason to be profoundly grateful for this policy. At least one concern probably owes its existence to it.

The era of narrow, selfish individualism must pass. We must enter upon a new era of co-operation and cordial understanding between buyer and seller, producer and distributor, and the individual units of our various industries. Only upon such a foundation can a sound economic structure be erected. Individuals and organizations alike must learn that neglect of the spirit of live and let live, so ably expounded by Judge Gary, produces little but friction, heat, rancor, and impairment of earnings.

The buyer and the seller are as dependent upon each other as are the producer and distributor of the product. In the long run, buyer and seller alike will be adversely affected by any influence which undermines the stability of the other. The best assurance for the consistent prosperity and progress of both, and of American business as a whole, lies in active co-operation to foster constructive influences and stamp out those, such as price-cutting, which are responsible for destructive competition that menaces the welfare of all concerned.

German-Jap Dyestuff Treaty

(*Special to CHEMICAL MARKETS*)

Tokyo, April 12.—The dyestuff policy of the Ministry of Commerce and Industry adopted since 1916 will be dealt a telling blow on the enforcement of the gentlemen's agreement regarding the import of dyes from Germany to Japan following the ratification of the Japan-German Commercial Treaty by Japan on April 10.

When the Doitsu Senryo Kaisha, the Japan agents for the Badische Aniline Soda and Fabrik, intends to import dyes provided for in the agreement and more than 60 kinds of semi-prepared dyes into Japan, the company will have to receive sanction of the Ministry. The Ministry authorities are able to raise objection to imports because of the protection of the domestic dyestuff industry but when there is no such article as to meet the demand in Japan the Ministry cannot object to the company's application for import. Under such conditions, imports of Victoria Blue and many other important dyes not yet produced in Japan, will be made actively.

The Japan Dyestuff Mfg. Co. authorities told a representative of CHEMICAL MARKETS that the agreement included about 60 kinds of dyes into the list of restriction. Import of these articles will have to be done by permission of the Ministry, subject to a conference at the joint Japan-German commission consisting of five members each from the Doitsu Senryo, the Foreign Office, the Ministry of Commerce and Industry, a representative of consumers and that of manufacturers. However, 27 types of dyes that are produced in Japan, under Government subsidy to the amount of yen 2,500,000, are excluded from the restricted list.

Further it is pointed out that the Japanese Government has been protecting this industry for ten years but the fact that these 27 important articles are excluded from the list makes their import free in the future. This is a serious blow to the Japanese dyestuff industry. When there is a necessity for Japan to add more articles to the restriction list, the matter will have to be submitted to the commission but the adoption of further articles is considered difficult.

The Ministry and the Japan Dyestuff Mfg. Company are in favor or adding more articles but the Doitsu Senryo and consumers here will oppose it. The Foreign Office is not expected to assume any definite attitude, since it has no such understanding in the protection of domestic industry.

Under the conditions, the dyestuff agreement is expected to bring about unfavorable effects on the Japanese dyestuff industry, because it will be hit by the encroachment of German dyes. The completion of manufacture of important dyes in Japan will become very dubious.

Society of Chemical Industry, Societe de Chemie Industrielle, American Chemical Society and American Electrochemical Society, hold joint meeting at Chemists' Club, New York, May 4. Dr. Benjamin T. Brooks spoke on "The Polymerization of Hydrocarbons" and Per K. Frolich, on "The Role of Catalysis in High Pressure Synthetic Reactions."

Annual Cellulose *from the* Jerusalem Artichoke

By A. C. Thaysen, Ph. D.

of R. N. Cordite Factory, Holton Heath, Wareham, England

In an address delivered by Raitt in 1927 before the Forestry Section of the British Association for the Advancement of Science attention was once more drawn to the precarious position of the worlds remaining supplies of soft wood timber and statistical evidence was brought forward to show that the consumption of this essential material is steadily expanding, increasing at the rate of 25 per cent. in 10 years. The seriousness of this gradually increasing consumption becomes more apparent perhaps when considered in conjunction with the statement by the Chief of the Canadian Forestry services, that Canada's timber supplies will be exhausted in less than 30 years if consumption proceeds at the growing rate mentioned. In the United States, as in many other timber producing countries, conditions are equally serious. In the States the consumption of timber to-day is actually four times greater than the replacement through planting.

Cellulose from an annual crop as against production from the world's diminishing supply of soft wood lumber is receiving much attention at the present time. Dr. Thaysen advances the possibilities of cellulose from the artichoke as another source of annual plant production.

This abnormal position is due to some extent to the worlds increasing demand for pulp—for cellulose—a material which no longer possesses the valuable structural properties of timber, in which, in fact, these properties have been purposely destroyed.

The consumption of pulp to-day is of the order of 15 million tons per annum, equal to about 40 million tons of wood, and will have reached a figure of at least 60 million tons of raw wood twenty years hence. Though this quantity constitutes but a fraction of the total world consumption of soft wood, and probably does not exceed 10 per cent. the replacement of wood by another raw material in the pulp industries, where the structural properties of wood are of no importance, would assist in alleviating the increasing world shortage of timber.

With a view to discovering a suitable substitute for wood in the pulp industries, attention has lately been turned towards the possibility of utilising the cellulose of annual plants for this purpose. Such plants frequently contain cellulose in appreciable quantities. They develop and ripen within a single season and constitute therefore a much more flexible source of supply than timber. They are available in countries where timber is scarce and where in consequence pulp has to be imported. They are frequently available as by-products from agricultural industries and are of little if any commercial value. This is the case, for instance, with maize stalks, cotton plants, various grasses and straws, sunflower stalks, flax shoves, and many other vegetable residues. In other cases, where not actually available, they can be produced at short notice in the form of by-products from crops which can be utilised for various purposes. The latter is the case with the Jerusalem artichoke, *Helianthus tuberosus*, the source of annual cellulose dealt with in this article.

The question as to whether, for industrial purposes, annual cellulose is equal to, or perhaps even superior to, pulp obtained from timber, has not yet been fully answered. For purposes of paper-making many types of annual cellulose undoubtedly are equal or superior—Esparto grass for instance. But for the preparation of cellulose esters evidence in favor of the use of annual cellulose has still to be obtained.

Hitherto attention has been directed chiefly towards ascertaining whether annual cellulose can be produced in bulk at prices comparable with or lower than those paid for wood, and towards the elaboration of suitable technical methods for its preparation.

The bearing of both of these questions on the production of cellulose from artichoke stalks will be discussed in some detail below. Speaking more generally on the question of available supplies of residues from annual plants it may be mentioned

that there are produced every year, throughout the world, some 800 million tons of cereal straw the average value of which would not exceed two pounds Sterling per ton. With a yield of 33 per cent. of cellulose from this material, a minimum given by Cross and Bevan, †) the cost of the raw material per ton of "straw" cellulose would be six pounds Sterling, a figure comparing favouring with the price of seven pounds Sterling paid to-day for the wood required to produce one ton of pulp.

Maize Stalk Production

In the case of maize stalks, of which the world has an annual output of some 250 million tons, the position would be still more favorable since the agricultural value of this material falls considerably below that of straw. An absolute waste product such as flax shoves, of which the world produces about 500,000 tons yearly, could probably be obtained at 10 shillings a ton, or two pounds 10 shillings for the material required to produce one ton of cellulose. Thus, it will be seen that not only does the world produce more than sufficient raw material for the production of annual cellulose in quantities to meet the demand for pulp, but the raw material may be obtained at prices which fall well below those paid for wood. Taking a narrower view and considering the position of annual cellulose from the point of view of one particular country the aspects may in some cases prove less attractive. This is noticeably so in countries like Great Britain where agriculture to a very large extent has concentrated on the raising of stock. In Great Britain the value of straw may not exceed two pounds Sterling a ton, but the available supplies are required for various agricultural purposes, including humus production, which preclude its adoption as raw material for cellulose manufacture. Barring a comparatively small amount of flax shoves, which at its best would not yield 10,000 tons of cellulose per annum, there are no raw materials available in Great Britain for the production of annual cellulose. If for one reason or another it should become desirable or even essential in such countries to produce cellulose from indigenous sources it would be necessary to introduce crops which could serve the dual purpose of supplying feeding stuff for cattle, or be used for other agricultural or industrial purposes, and raw material for cellulose production.

Among suitable crops the Jerusalem artichokes, *Helianthus tuberosus*, would undoubtedly occupy a leading position. It is a plant which reaches a height of from 5 to 10 feet, produces on an average from 3 to 5 tons of stalks per acre and from 5 to 11 tons of tubers. It develops luxuriantly throughout the temperate zones of the world on most soils which do not become waterlogged and requires little attention as regards manuring and weeding. In fact, when planted at a suitable distance the dense foliage of the plant does not allow sufficient light to penetrate to enable weeds to develop. Its rhizomes are extraordinarily prolific and once grown on a plot of land the plant is difficult to eradicate since almost any part of its rhizomes, left in the ground, is capable of developing into a full grown plant. This fact, of course, makes the artichokes unsuitable for use as a rotation crop, but on the other hand has the important economic advantage of enabling several crops of the plants to be harvested off the same plot of land without expenditure on reseeding and recultivation. In recent field experiments carried out in Great Britain it was shown that four successive crops of stalks and tubers could be harvested off a plot of land without any appreciable loss in yields. The whole expenditure incurred during the four years trial, once the land had been planted, consisted of the payments of rent and of cost of harvesting the stalks and tubers.

Artichoke Carbohydrate Content

The artichoke tuber contains from 17 to 19 per cent. of readily digestible carbohydrates, consisting in part of inulin and yielding fructose on hydrolysis. In some strains the carbohydrate content is higher, as much as 23.8 per cent. having been recorded.‡ The tubers have been shown to be a useful food for growing pigs, dry sows and sheep. They are useful therefore as a crop for folding sheep and pigs and, when used as such, would not have to be harvested, but could be left in the ground until required particularly as they are not damaged by slight frosts.

With the tubers utilised in this way the total expenditure during four years cultivation of an acre under artichokes would not exceed 54 pounds Sterling. During this period one acre might be expected to yield 12 tons of air dry stalks and 24 tons of tubers. Taking the nutritive value of the tubers "in situ" as one pound 10 shillings a ton, the cost of producing 12 tons of stalk, including harvesting and transport to an adjacent centre, would be 18 pounds Sterling, or one pound 10 shillings a ton. With a yield of 20 per cent. of hemicellulose—free cellulose from the air dried stalks, a rather low average, the cost of the stalks required to produce one tone of cellulose would be 7 pounds 10 shillings, a figure higher by 10 shillings than the present day price paid for a corresponding amount of wood. Unless therefore the cost of production of cellulose from artichoke stalks could be shown to be at least 10 shillings per ton less than that from wood, the aspect of artichoke cellulose could not be entertained—at least when coupled with the use of the tubers as a food for cattle.

There would be left of course the possibility of attempting to increase the value of the tubers by utilising them for more remunerative purposes, and thereby indirectly to reduce the cost of producing the stalks. The most promising way of doing this would undoubtedly be to utilise them as raw material in various fermentation industries. With a ferment-

†F. F. Cross and E. J. Bevan: "Cellulose," page 284, London 1916. Longmans Green and Co.
‡U. S. Dept. of Commerce, Bureau of Standards. Techn. News. Bull. No. 94, Washington, 1925.

able carbohydrate content of 19 per cent. 3.5 tons of artichokes would be equal in fermentative value to one ton of maize. Taking the value of maize in Great Britain as 8 pounds per ton the corresponding value of artichokes per ton would be, say two pounds five shillings. Allowing 10 shillings a ton for the cost of harvesting the tubers, their value "in situ" could be placed at 1 pound 15 shillings a ton sufficient to reduce the cost of production of the stalks from 1 pound 10 shillings a ton to one pound a ton, or at the rate of five tons of artichoke stalks per ton of cellulose to five pounds per ton of cellulose.

The value of the tubers for alcohol production had been recognized a long time ago. In a memorandum

Cellulose from artichokes consists in most cases of very short fibres.

† on the production of power alcohol from tubers and root crops, Sir Frederic Nathan gave a comprehensive review of work done in the past on the use of Jerusalem artichokes for alcohol production. In this memorandum are embodied also the investigations carried out in the writer's laboratory to ascertain once more the yields obtainable from artichokes, both in the laboratory and on a semi-technical scale.

In these investigations it was established that practically the whole of the available carbohydrates of the tubers could be fermented by yeast without the introduction of a preliminary hydrolysis, in spite of the presence in them of a considerable amount of non-reducing carbohydrates. In this respect therefore artichokes would be superior to maize where a saccharification prior to fermentation is essential. The actual fermentation of artichoke tubers was found to proceed smoothly and to result in an average yield being obtained of 18 imperial gallons of 95 per cent. alcohol per ton of fresh tubers. The solid residue left in the mash after fermentation was shown to contain a very high percentage of protein and could undoubtedly be used as a cattle food. Its composition, as well as that of some other raw materials used for alcohol production, is given in the table below.

	Potato per cent	*Distillers Grain* per cent	*Barley and Wheat* per cent	*Artichokes* per cent
Water	12.0	....	7.2	20.0
Protein	24.0	34.29	19.5	32.3
Fat	3.2	10.51	7.2	3.7
Carbohydrates	49.0	53.1	62.9	33.2
Crude fibres	49.0	53.1	62.9	33.2
Ash	11.8	2.3	3.2	10.8

The only other fermentation industry likely to absorb appreciable quantities of tubers was that usually described as the butyl alcohol fermentation, an industry which is likely to extend its consumption of raw material as the demand for solvents for cellulose esters increases. Up to now maize and rice have been almost exclusively used in the butyl alcohol fermentation, a distinct drawback in countries where these crops are not indigenous. To ascertain to what extent Jerusalem artichokes could replace maize in this fermentation industry, a considerable amount of work was carried out. ‡ It was found that the carbohydrates of the tubers could not be fermented by butyl alcohol producing bacteria and that they had to be hydrolysed to fructose before this was possible. In the form of fructose good yields of butyl alcohol and acetone were finally obtained, provided the concentration of fructose in the mashes was kept below four per cent. Higher concentrations exercised an inhibitory action on the activity of the bacteria. On a semi-technical scale as much as 35.6 per cent. of butyl alcohol-acetone mixture, calculated on the carbohydrates present, were finally obtained from the fresh tubers. This compared favourably with the yields of butyl alcohol acetone mixture obtainable from cereals.

Taking the annual output of industrial alcohol in Great Britain as four million gallons, the maximum quantity of artichoke tubers which could be absorbed by this industry would not exceed 250,000 tons, equal to 125,000 tons of stalks. The butyl alcohol fermentation industry, which has not been worked in Great Britain since the world war, could not be expected to contribute to an increased consumption of tubers.

Even under the most favorable conditions, therefore, with the whole of the requirements of Great Britain for industrial alcohol being produced from artichokes tubers, the quantity of stalks becoming available would be insufficient to meet the requirements of the cellulose industry.

Further supplies could only be forthcoming as a by-product from tubers grown for feeding purposes, that is, under conditions which would render these stalks somewhat more expensive than wood.

To retain present day prices for pulp when using stalks as raw material it would be essential to insure that the cost of the conversion of artichoke stalks into cellulose would fall below that of the conversion of wood. To what extent this may be possible on a technical scale could not yet be demonstrated. The

(*Continued on page 564*)

†Fuel for Motor Transport, Third Memorandum, Dept. of Scientific & Industrial Research, Fuel Research Board, H. M. Stationery Office, 1925.
‡A. C. Thaysen and B. M. Green: Journal Inst. Brewing, Vol. 33, p. 236, 1927.

Synthetic Lumber, Sugar and Sunshine

By Elbert C. Lathrop
Director of Research, Celotex Company

IT has been said that we are at present passing from the industrial age of iron and steel into the age of cellulose. Not indeed, because its uses in one form or another do not date back to antiquity, but because many of the wants of present day civilization are best satisfied by the products produced from this universal constituent of vegetable life.

The rayon industry is an outstanding example of the ingenuity of man in converting this raw material into hundreds of articles, many of which better fill requirements than the products used before, and many more supplying hitherto unfilled needs.

Synthetic insulating lumber, one of the most recent developments in the use of cellulose material, like rayon, supplies an industrial need not filled previously by any one material. Rayon was developed to take the place of natural silk, instead it has filled an economic want unfilled by any other material. The use of natural silk has not decreased; to-day its consumption is greater than ever before, partly because it is used in conjunction with rayon.

Process Now Seven Years Old

Celotex insulating lumber, made from the bagasse from sugar cane, during its brief history of seven years has demonstrated, not only that it can replace lumber from trees in a few restricted uses such as sheathing and plaster base, but that because of its lightness, its high heat insulating properties, its sound absorbing properties, its strength, handleability and toughness, it supplies a material want in our economic industrial and home life. It, like rayon, supplies comfort. It, like rayon, increases the use of the so-called competitive product, lumber, since Celotex in most of its applications is used with lumber.

The economic importance of synthetic insulating lumber, made from an annual crop, sugar cane bagasse, is far greater than would appear at first glance. The trend of research development to-day is directed in large measure towards the better utilization of energy; as examples may be cited such developments as the low temperature carbonization of coal and lignite, the cracking processes of the oil industries, high temperature, high pressure steam power developments, the manufacture of synthetic ammonia, etc.

Considering the subject broadly, the most immediate source of energy is the sun. Without this energy our coal fields and oil reserves to-day would be non-existent. These supplies of fuel are but the stored up energy of the sun as it has been captured by plant life and converted into cellulose and other plant constituents. These fuel deposits have taken centuries in their making and while they are vast, they are limited and there is no certain evidence that nature is replacing them in kind.

The Obvious Problem

In a sense, then, the problem is, how may this natural fuel supply be conserved, and how may the sun energy be captured and put to work more quickly and economically than during these past centuries.

There are, of course, many approaches to the solution of these problems. The want filled by this new synthetic lumber is that of high heat insulation. Celotex insulating lumber has a heat transmission of 0.33 B.t.u. per inch thickness, per sq. ft. per °F. temperature difference, a value practically identical with that of cork. It is made into sheets 4 ft. wide by 7 to 12ft. long and finds uses as sheathing, plaster base, interior finish, carpet lining, attic and basement lining, roofing in homes, offices and industrial plants. The use of insulation of approximately this value has been shown by many installations to be capable of saving from 25 to 30% of the fuel used to produce the same comfort in homes, offices and industrial plants under the methods of ordinary construction.

Power plants have for years realized that the insulation of steam boilers, pipes, etc., was necessary, if any degree of efficiency was to be obtained in operating mechanical machinery. The problem of supplying heating comfort to the human machinery in an efficient manner has only been a matter of public consciousness in the past few years, brought about to

a great degree because of the merchandizing problems incident to insulating lumber.

Chemists recall how the price of platinum rose rapidly when it became an important item in milady's jewelry. This was due to the change from an industrial to a home market. Fuel, has, of course, always had a home, as well as an industrial market, and the home and office consumption of fuel is far larger than the industrial.

The development of insulating lumber, the use of which in homes and offices makes possible efficiencies of 25 to 30% in fuel use, represents a tremendous economic advance in this conversation of what has taken centuries of captured sunlight to produce—coal and oil. It has brought within reach to the public the possibility of residential heating with artificial gas and electricity.

An estimate of the amount of coal saved by efficient insulation may be arrived at as follows: Life of home —20 years; size 30′ x 30′ x 20′ using in walls and ceilings 5,000 sq. ft. Celotex; fuel before insulation 15 tons per year; saving by insulation 25 to 30% or four tons per year; total saving of 5,000 sq. ft. Celotex in 20 years service equals 100 tons coal or two cars of coal. A days production of Celotex (1,100,000 sq. ft.) during its average life in a home will result in the saving of 440 cars of coal, or a yearly production of 350 million sq. ft. will save 140,000 cars of coal.

During the brief period of seven years more than a quarter of a million American homes have used celotex insulating lumber, many apartment houses have installed it for heat insulation purposes and it is a part of many hundred acres of roofs. On one industrial roof alone, more than a million square feet of celotex roof insulation board were installed. The demand for this material in Europe, South America, Africa, Asia and Australia has grown so rapidly that last year more than 25 million square feet were exported. Thus, the economic importance of this synthetic product has become world wide. Certainly the industry is but in its infancy. The rapid growth of celotex production from 19,000 million feet in 1922 to 350,000,000 feet in 1928 is evidence enough of the public recognition of its economic value.

Putting Sunlight To Work

The other phase of the problem, that of putting sunlight more quickly to work, is to-day engaging the best minds of all the great countries. England has for several years had a commission studying the possibilities of making better use of the great agricultural areas of her empire, particularly in her tropical possessions. Much of the endeavor has been directed to the production of fuel and power-alcohol, from the rank vegetable growths possible in these countries.

Trees have supplied one of the most accessible and readily worked of all building materials. As time has gone on other building materials have been developed which have made possible structures not obtainable with wood lumber, and while these materials have replaced wood lumber in some of its uses, the production of lumber has increased apace. Proper conservation of our forests should make wood lumber available for years to come: certainly to many of its uses it is wonderfully suited. On the other hand, the trend has certainly been toward depletion of forests situated economically to our centers of population and toward the increasing use of wood products for paper, rayon, nitro and acetate celluloses, etc.

Trees Not Intended For Lumber

Contrary to opinion so expressed, however, God did not grow trees for lumber. He grew them as an end in themselves—to supply plant life. If nature had intended the tree to be a mill manufacturing lumber it would have provided something more efficient, with less waste. Lumber from trees is man's ready and immediate adaptation of a natural product.

Sufficient experience in the past 75 years has been gained in the manufacture of synthetic products by the chemist and chemical engineer to know that man, in order to supply a particular need, can make many products freer from natural disadvantages and more directly suited to a particular purpose than the product adapted from nature. Further, since many such products, for example, indigo, have displaced the one obtained from natural sources, the economics of these processes are correct.

It takes many years, 30 to 75 depending on kind, to grow a tree suitable for the saw mill. This method of capturing sun energy then, is a slow one. The logical source of a synthetic lumber, to those of us developing this new industry, was some annual crop.

Various Fibres Studied

In the development of celotex, many fibers were studied. Wood fiber was considered to be uneconomic for the long pull. In the sugar cane fiber was found, what subsequent intensive research has confirmed, an ideal fiber for synthetic lumber. This product was not designed to be just lumber but something more than lumber cut from trees could supply, an insulating lumber.

The fiber of the sugar cane after the sugar has been removed by the sugar mill is known as bagasse, or megasse. This fiber has constituted one of the great by-products of the world, and many ventures have failed and many fortunes have been lost in seeking its economic utilization. Because of its tough character and its resistance to digestion and decay it could not economically serve as a food for cattle, nor could it be returned to the land. When piled in the huge piles necessary because of its bulk it stood on the land for years. The only use found for bagasse hitherto was for fuel in the sugar houses. For its use special furnaces were designed, but it has always been an indifferent, inconvenient and inefficient fuel. This has been demonstrated, particularly in Louisiana, where oil has replaced bagasse as a source of fuel in about 40

sugar houses since The Celotex Company began its operations.

The supply of bagasse in the world is enormous as the following figures show:

Country		*Approximate Yearly Production of Bagasse in Tons*
Louisiana	(1928)	200,000
Porto Rico	(1926-27	550,000
Cuba	(1926-27)	4,500,000
Hawaii	(1926-27)	700,000
British India	(1926-27)	3,200,000
Java	(1927-28)	2,170,000
Philippines	(1926-27)	575,000
Australia	(1927-28)	400,000
Egypt	(1926-27)	90,000
Natal	(1926-27)	216,000

Assuming that from one ton of dry bagasse 3,000 sq. ft. of celotex can be manufactured there will be sufficient bagasse in Louisiana in 1928 to produce 600 million square feet. The bagasse in Cuba will porduce 12.5 billion square feet, from Porto Rico 1.6 billion sq. ft., etc. Thus, the supply of raw material is almost unlimited. Let us recall here that sugar is a food necessity and that the cost of sugar from cane has to date proven the most economical of all sources. Thus, for many years to come at least, this source of fiber supply seems permanent.

There are a number of economic advantages in the use of bagasse not found in other fibers, one is that the fiber is grown, collected and partially milled as a part of the sugar operation and hence, these costs are borne by the sugar industry. The use of the fiber to make insulating lumber is a decided economic advantage to the sugar industry since the fuel value of the bagasse plus a profit is given in return for the fiber.

When one considers that one day's production of celotex insulating lumber is equivalent to the wood lumber that could be cut from a 130 acres stand of pine timber, an idea of the energy efficiencies of this synthetic lumber is obtained. In a year from approximately 60,000 acres of sugar cane, at present production rates, the equivalent of sunlight acting on 39,000 acres for 50 years is obtained in the form of insulating lumber which in turn will save during its useful life 140,000 cars of coal, representing we do not know how many acres or years of sun energy.

Sugar is at once the most concentrated form of human fuel energy and the cheapest. The days of depriving the athletic training table of sugar seem to be past and sugar is now fed to athletes immediately before contests because of its high calorific value and its quick convertability into musuclar energy. In producing fiber, the sugar cane also produces about an equal weight of pure sucrose, having a calorific value of 7108 B.t.u. per pound. In producing a ton of fiber for the manufacture of celotex insulating lumber there is approximately a ton of sugar having a calorific value of 14 million B.t.u.'s produced, an equivalent of 920 pounds of anthracite coal, but which is burned in the human mechanism with greater efficiency than is the coal under the boiler. Sugar cane as now used by industry represents the most efficient means of capturing and conserving sun energy.

The beginnings of this industry of synthetic lumber were fraught with many difficulties, not the least of which was to convince the sugar planter that the venture was sound. The Louisiana planters had from time to time contributed hopefully to ventures which were to successfully put to use this by-product,

Some idea of the height attained by sugar cane on this Florida plantation may be had by comparison with the man in the picture.

bagasse. By the time celotex was invented their hopes had suffered so many disappointments that it was with the greatest difficulty that they could be interested in selling their bagasse. Finally the Minor Estates at Houma, La. consented in 1920 to contract their bagasse with the understanding that the material must be removed so promptly that no shut down of their mills during the sugar campaign would result. These Southdown Plantation Mills grinding 1,500 tons of cane a day produce 300 tons of damp bagasse, an enormous pile of fiber. The first season's experiences were daily battles to get this material far enough from the mill to prevent shut downs. The blower system used that year for handling bagasse was discarded. In 1927-28 more than 100,000 tons of bone dry bagasse were taken from about 40 sugar houses and baled without causing a delay in the operation of any of them.

Although careful estimates of bagasse supplies over many years in Louisiana had been made before locating the celotex industry there, it was discovered after a few year's operations that the sugar industry was on the decline. Careful studies by the U. S.

Department of Agriculture and by expert sugar pathologists and soil chemists indicated that the cause of this decline lay in the lack of disease resistance of the native canes. The Celotex Company was an important factor in this study and in the campaign which followed in the introduction of the new P. O. J. Cane varieties imported from Java by the U. S. Department of Agriculture which in 1927 gave yields of 20 to 30 tons per acre as compared with 6.7 tons per acre in 1926. The profit from the sale of bagasse was an asset to the sugar planters in weathering this period of depression. The present prospects for the sugar industry in Louisiana were never brighter.

How large a part this infant synthetic lumber industry played in the recovery is difficult to estimate, but it is believed that the influence of so much invested capital and so active a demand in the survival of the sugar industry were of real importance, not only in successful financing but also in uniting the planters into a closer community of interest.

A study of the sugar house efficiencies resulting from the replacement of bagasse as a fuel, as well as the lessons incident to the last few years experience in sugar production convinced Mr. B. C. Dahlberg, President of The Celotex Company, and his associates, that simply taking the fiber from the sugar industry was but to half way do the job. Since the industry was founded on the premise that the supply of bagasse in the world was sufficient for years to come and that its price would remain relatively unchanged while the price of wood fiber was bound to increase, it seemed logical to go into the growing of sugar cane so that all of the economies resulting would actually bring about a decrease in the price of bagasse. That other economies will naturally result in such a plan is obvious.

Sugar Plantations Studied

With this in mind, studies were made of the sugar growing possibilities of the Everglade lands on the south shore of Lake Okeechobee, Florida. This location is the most ideal for cane culture in Continental United States from many standpoints such as rainfall, climate, etc. But two facts had to be demonstrated (1) that the lands could be put under water control and (2) that sugar cane of high tonnage and good sucrose content could be grown. Both of these have been proven. The storm of 1927 showed the efficiency of the drainage system installed by this group at Clewiston, Florida, and the cane yields this year averaging 60 tons or more to the acre with determined sucrose contents of as high as 15% show that the careful scientific study of this venture has been warranted. Weighed yields of 94 tons per acre by a new cane variety developed by the U. S. Department of Agriculture at Canal Pt., Fla., Sugar Experimental Station indicate the possibility that this will prove to be one of the greatest of sugar growing areas in the world. The Southern Sugar Company now controls 95,000 acres of this land and is at present erecting a 1,500 ton mill at Clewiston which together with a smaller mill of the company at Canal Point, will grind several thousand acres of cane in the fall of 1928.

Problems Studied Scientifically

In Louisiana these same interests have also carefully surveyed possibilities, and The South Coast Company which they have formed owns four of the finest plantations comprising 39,603 acres with four sugar mills having a daily grinding capacity of 5,000 tons of cane.

These combined industries intend to use to the utmost all the scientific and technical engineering knowledge in the culture of the soils, in the pathology and physiology of the canes, in the manufacture of sugar, syrups, and fermentation products from the juices of the cane, and in the manufacture of useful articles from the fiber. The leaves will go back to the soil as fertilizers as will also the spent liquors from the mills.

Economic Conclusions

We believe that the adventures of the group developing synthetic lumber point clearly to two economic lessons in the agriculture of the future, which are already at our door—(1) The fact that the time will come when all of the plant must seek its most useful economic level and outlet and that a crop which contributes large amounts of waste will no longer encumber the land. (2) That agricultural practices will be most rapidly affected by industrial groups having large invested capital and dependent on agriculture as a source of raw material. This may prove to be the means of most rapidly converting agriculture from small business methods to industrial efficiencies and practices.

It has been suggested that the time will come when the land will be given over to the production of cellulose, and food will be produced in the laboratory or plant. The sugar and synthetic lumber method of capturing sunshine is a step in what may be a change in agricultural viewpoint.

Total imports of fertilizer and fertilizer materials for March, according to the National Fertilizer Association, were 74 per cent. larger than for March, 1927, and for December to March, inclusive, 54.5 per cent. larger than for the like period a year ago. It must be borne in mind that these increases are in comparsion with the very poor season a year ago. Imports for March showed the following changes: Sodium nitrate, an increase of 88.2 per cent.; ammonium sulfate-nitrate (Leuna salpeter), an increase of 288.6 per cent.; phosphates, a decrease of 18.2 per cent., an increase occurring in bone phosphates and a decrease in other phosphates; and an increase of 42.6 per cent. in potash fertilizers.

Total exports of fertilizer and fertilizer materials for March were 4.6 per cent. larger than for March, 1927, and for December to March, inclusive, three-tenths of one per cent. less than for the like period a year ago. March exports of nitrogenous materials were 24.3 per cent. less than for March, 1927; phosphates, 5.4 per cent. larger; prepared fertilizer materials, 114.9 per cent. larger, and "other fertilizers," 12.1 per cent. larger.

Planning Salesmen's Territories

Manufacturers apparently have no specific policy in handling territorial business other than working from the common base of total volume and the number of calls which should be made in any one territory.

"PLANNING salesmen's territories in the chemical industry is like building battleships among nations", according to one sales manager. "It is too often determined by competition. Each house likes to have as many salesmen of as high a character as its competitors' in any particular territory. It likes to have its sales coverage made just a little more frequently than that of its competitor. Consequently the thing often becomes a vicious circle with each continually trying to outdo the other. This continues until one or the other, or both, realize that this unwise competition is costing more than it is worth. A halt is called. Salesmen are distributed more rationally and more economically. Unfortunately, this state of affairs does not last. Something or other happens, an emergency arises, business booms in some particular territory, and the thing starts all over again."

A certain degree of uncertainty in planning salesmen's territories seems to be the rule rather than the exception in the marketing of chemicals. Territorial boundaries are often governed by arbitrary conditions, rather than by a certain definitely worked-out formula. Sales managers point out the fact that the very nature of the business makes an elastic system more productive than a more definite alignment. They admit that definite considerations in planning territories and definite plans for checking territories to determine which are too large and which too small are necessary. But they feel that this need is not a particularly important one in their business and that the methods now in use for determining territorial boundaries, while not the result of any very definite or fixed plan, meet the requirements of the business and get the results.

In general, the size of any territory is determined by two basic factors. The first is knowing the number of calls which can be made in that territory and the second is knowing the volume business in the territory. A combination of these two factors leads eventually to a knowledge of the number of *profitable* calls which can be made in a territory, which, in the final analysis, determines the boundaries of that territory.

Each company has to decide for itself as to how many times a consumer should be called upon. This differs according to the type of business. For instance, most sales managers agree than consumers who buy on yearly contracts need be called upon less frequently than the smaller buyers. As a general rule, the jobber salesman has to call more frequently than a manufacturer's salesman, but the more limited scope, territorially, of the jobber, helps simplify his problem in this regard.

Sales-managers do not agree upon the number of calls a man can make per day although a reasonable average, derived by securing the relationship between the number of working days in the year and the number of calls made during the year, in the case of a representative group of salesmen, seems to place the figure at about eight calls per day. Even this figure, however, cannot in any sense be fixed arbitrarily, for the kind and size of the line and the density of the particular territory also have to be taken into consideration. An interesting side-light, in this connection, was contributed by one sales manager who said that, contrary to the usual belief, the number of calls a man could make in a dense consuming territory, such as a large city, did not exceed to any appreciable extent, the number he could make in a more scattered, rural territory. The man working the city takes less time, naturally, to travel between calls but this saving is nullified by the fact that he has to wait longer to see the buyer. The man working the more scattered territory consumes considerable time in travelling, but when he arrives his man sees him immediately and hastens to "visit" with him.

The chemical sales manager to-day has little difficulty in ascertaining the amount of business in a particular territory. The high standard of salesman's reports which he has developed and the efficient method in which he uses them, has given him all the facts concerning this particular phase of the territorial problem. Through these reports, he knows the total consumption in any one territory almost exactly. He knows his own volume in that territory and to a surprising degree of accuracy, the volume of his competitors. He does not expect to get all the business, but he has arrived at a certain definite percentage which he thinks should be his share. If he is not getting that amount of business out of a territory he examines conditions there as outlined in the reports coming from that territory. Inadequate sales coverage is, of course, one of the possible explanations. If the reports over any period of time indicate that consumers are not being visited often enough, he takes steps to reapportion territories to secure more adequate coverage.

But fundamentally, the size of the territory is based upon this factor of its business possibilities in conjunction with the other factor of possible calls. Through experience and some study of sales costs over a period of time, many calls may be eliminated entirely as being non-profitable. Others may be relegated to merely direct-by-mail sales efforts. Those which should be called upon may be formed into groups, i. e., one group to be called upon once a year, one to be called upon once every six months, and one to be called upon once every month. In some cases, where the tonnage is insufficient to warrant direct representation, the services of a jobber or an agent may be profitably utilized to secure sales and distribution.

Experience and a comparison of salesmen's records also assists materially in determining the size of territories. The position of branch offices or key cities from which the company operates is also of considerable importance. Oftentimes it merely resolves itself into a question of price from the buyer's point of view. In other words, a salesman may book business without regard to territorial restrictions as long as the price is right with the buyer. In many cases where price is determined by point of shipment the salesman's territory includes all he can cover from that given base without being bulky or uneconomical. Consumption and practicability often replace consumption and number of calls as a basis for determining territorial boundaries. Such an apparently irrelevant consideration as the town in which a salesman happens to reside may determine and has determined the apportionment of territories.

When a new territory is under consideration, the absence of any salesmen's reports giving the facts regarding consumption makes some sort of a survey necessary. This generally resolves itself into a house-to-house canvas. It is then a question of ringing the door-bells of any possible consumer and discovering what his requirements are. In other words, this is merely a special case and another method for arriving at consumption figures in determining policies with regard to a territory when salesmen's reports are not available.

Having arrived at the number of profitable calls in a territory, the sales manager fixes its boundaries accordingly. It then remains for him to keep a constant watch upon salesmen's reports, selling costs and the other considerations which have entered into determining the size of the territory, in order to determine when that territory becomes too large or too small. Obviously, when the salesman cannot make all the profitable calls in a territory, it has become too large for him. Conversely, when there are not enough profitable calls in a territory to make the salesman pay—all other things being equal—the territory has become too small. As has been pointed out, many other factors, especially competition, enter into the equation, preventing the application of any fixed formula to the solution of this territorial problem.

Who's Who In Chemical Industry

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Are We Not Neglecting Less-Carlot Distribution?

By George Stanley Robins
of G. S. Robins & Company

WHILE the chemical industry has been absorbed in the battle of production costs, too little attention has been paid to the quite important factor of distribution, particularly in less than carload lots. Much of the anguish among chemical manufacturers and distributors has been due to their neglect in giving studied consideration to the costs of handling in this day of hand to mouth buying.

The price of the less than carload lot of almost any commodity delivered to customer's door in any market bears a direct relation to the eventual price for that same commodity F.O.B. producing point. You have all seen "Wars" started because A. & Co. figured they could sell five barrels at five cents per hundred more cheaply than their competitor B. & Co. because their truck was delivering two barrels of something else at the same time. B. & Co. lost the business but came right back next time with another five cent cut and 'ere long the L. C. L. price of that commodity dropped in that market to carload cost basis. A. & Co. were jobbers while B. & Co. were the local office of a manufacturer. A. & Co. demanded a lower price from their source of supply in order to cope with the situation. And so the F.O.B. Works price was lowered and "the menagerie" started an uproar.

The cost factor of handling bulk chemicals in less carload lots is easily determined and is reasonably uniform for all handlers. Ninety-nine per cent. of the packages handled are either bags, barrels, drums, or carboys where weight is the principal factor. Therefore the unit of handling cost should be one hundred pounds. A record of the number of one hundred pounds handled can be readily determined by adding up each month or week or day the total weights from shipping tickets.

When it comes to the elements which make up cost of handling, one finds a wide variation in ideas and accounting methods (if there be any). Some handlers, (particularly manufacturers who sell principally in carload lots) seem to think their only extra cost in the execution of a less carload order is the drayage involved. But let them multiply their number of small lot transactions and they would soon be in the red on such a basis.

Fundamental economics teaches that the cost of handling any delivery is the proportionate amount of the costs of that transaction to the total costs of the entire volume. The cost of handling every less than carload lot therefore is the sum of the expenses of each operation necessary for the completion of the transaction. And that includes of course the costs of being in business, commonly called general overhead.

In the event that some of the A B C's of business have been forgotten as they seem to have been in distributing chemicals, let us enumerate the various elements of expense entering into the cost of handling from the time merchandise is unloaded from the car until the money is back safely in the bank and the city, county, state, and federal assessors have taken their portion.

1. Warehouse Expense:
   a. Rent or its equivalent
   b. Labor
   c. Upkeep and power
   d. Depreciation on equipment.
2. Drayage Expense:
   a. Labor
   b. Truck fuel and upkeep
   c. Truck depreciation
   d. Truck insurance.
3. Office Expense:
   a. Clerical salaries
   v. Postage, printing and stationery
   c. Telephone and telegraph
   d. Office equipment and depreciation
4. General Expense:
   a. Insurance on merchandise
   b. Liability and other insurance
   c. Taxes
   d. Legal and professional services
   e. Losses due to breakage and spoilage
   f. Credit losses
   g. Heat, light and sundries.

Is not every one of these a necessary part of the execution of every order?

Now divide the total of these costs for one year by the number of one hundred pounds of merchandise handled and your equation is like this—

$$\frac{\text{Total Cost of Handling}}{\text{Total Hundred Pounds Handled}} = \text{Cost per hundred pounds}$$

So far I have found very few manufacturers or distributors who have a "cost per hundred" factor based on all operations. One manufacturer who maintains nearly one hundred warehouse stocks of heavy chemicals located in the principal cities of the United States kept cost records on the items of physical handling only i. e. warehouse expense, drayage and insurance and found his average cost during 1927 for these operations only to be 32c per hundred pounds. This

St. Louis Warehouse of G. S. Robins & Co.

manufacturer deals in inclusive containers only and the volume handled ranged from twenty-five carloads per month in the best market down to one carload per two months in the slowest market. The figures represent a broad activity and give on an average of physical handling costs, which is significant. Next year this manufacturer is going to determine his total costs in executing the less than carload orders.

From those who have kept records of total costs, which information is based on operations in one market only, the average for inclusive package is 50c per hundred and for material shipped in returnable containers 60c per hundred. Of course these figures will vary in different markets according to variations in labor, rents, etc.

How many chemicals are being handled by jobbers and manufacturers to-day at prices which do not cover these costs of handling ?

How many manufacturers have overlooked these costs to themselves in establishing differentials for less carload lots F.O.B. their plants ?

It is interesting to note the extra cost involved in the handling of returnable containers but is easily explained when one considers the back haul empties, the recording of them and the issuing of credits or checks as the case may be.

A startling expense is that of rush deliveries. "Hot shots" must necessarily be handled by light, speedy trucks where tonnage carried is small but labor and gasoline and maintenance are just about the same as for the heavy duty trucks. The consumer who requires special rush service presents a serious delivery expense.

Selling Expenses Vary

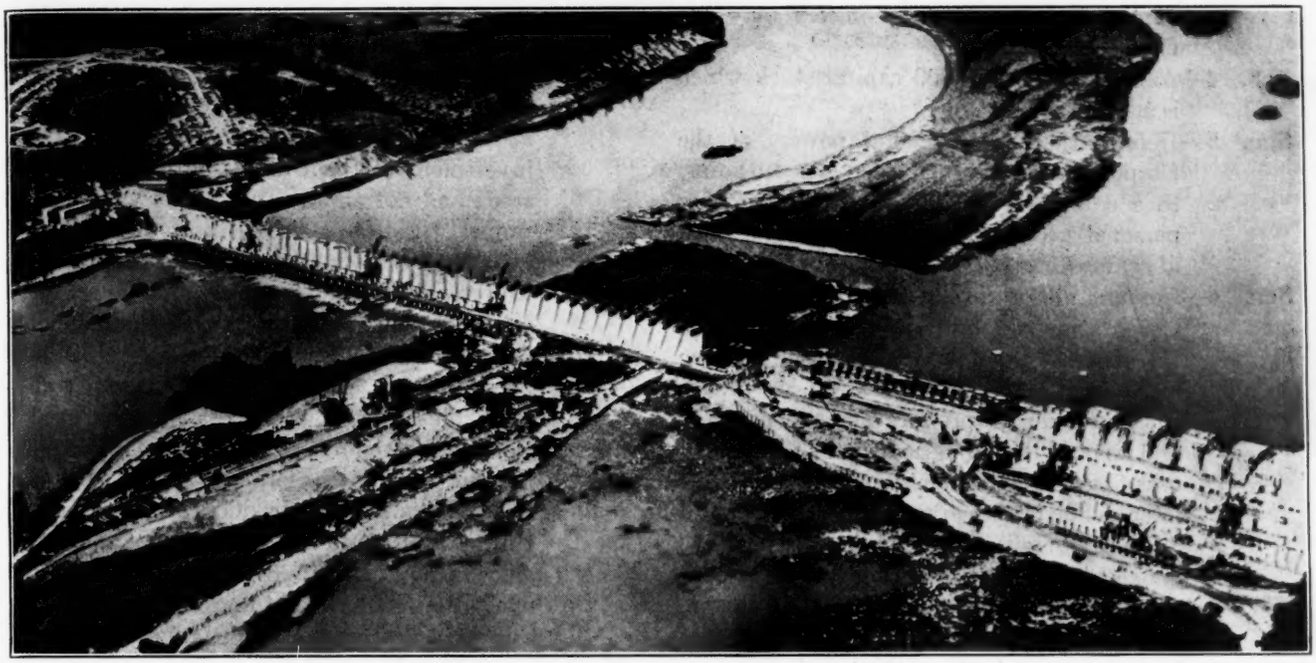
You will note that no mention has been made of selling expense. That is because selling expense is so variable. There is so much of misdirected effort put into sales; so often the sales work on one item sells another and conversely an error in executing an order for one loses the order on the other. But all sales promotion costs a plenty and it is a factor which has all too often been woefully neglected in marketing chemicals.

For the most part chemicals have to be sold. In the less than carload distribution, the consumer usually has to be shown how to use them, all of which costs time and money.

Sodium nitrite is a good example of where a lax of consideration sales costs by the manufacturers in their anxiety to turn their production into dollars has greatly curtailed the use of the material. When sodium nitrite was approved by the Bureau of Animal Industry for use in the curing of meats, there was a rush by the manufacturers "to get the business" from the packing trade. The manufacturers forgot entirely that except in the largest plants, the curing had been done by the same man for the past thirty or forty years. That man was using the formula handed down to him by his father and he realized the responsibility of curing thousands of dollars worth of meat which has been entrusted to him. Furthermore this "curing man" was usually located in a remote corner of the plant about a half hour's journey over slippery floors and through chilly rooms from the purchasing office entrance. And to make the situation more complicated, the man to be "shown" and "sold" seldom spoke better than broken English and was very reluctant to make any change in his formula.

Any capable chemical salesman, given sufficient time could have demonstrated that sodium nitrite would effect more efficient results at a saving of nearly 300% over costs of chemicals by the old process. But the manufacturers of sodium nitrite had the price on single barrels hammered down so that there was left not even the cost of handling differentials let alone any provision for sales expense. And so the chemical distributor gave up trying to sell nitrite to the packing trade and little of it is now being used, except by the large packers.

(*Continued on page 566*)



The Government *in the* Fertilizer Business

ONCE again the threadbare puzzle of what disposition—if any—will be made of Muscle Shoals is before Congress in the form of an amendment and what amounts to a complete substitute for the Norris Resolution.

This amendment has been favorably reported by the House Committee on Military Affairs by a vote of 17 to 4. In many respects it is more threatening than its predecessor to the stability of the privately owned fertilizer enterprises as its main purpose is to place the Government in the fertilizer field as a manufacturing corporation.

No end of indignation has been aroused in the fertilizer industry and so little space has been devoted to this latest move by the newspapers that the National Fertilizer Association is fearful of the amendment passing the thoroughly disgusted House without serious opposition. The Association considers the defeat of the amendment so vital to the life of the privately owned fertilizer industry of the country that it has prepared, through its secretary, Charles J. Brand, a digest on the various sections of the proposed "Muscle Shoals Act of 1928", analyzing the contents of each of the 20 sections as follows:

Sec. 1—Creates the "Muscle Shoals Corporation of the United States" to maintain and operate the Muscle Shoals properties for national defense, agricultural and industrial development, navigation and flood control.

Sec. 2—Provides for appointment by President with Senate confirmation of five directors, not more than three of whom shall be members of same political party.

Sec. 3—Fixes terms of office; provides for filling vacancies, stipulating that vacancies shall not impair action; fixes compensation of board members at $50 per day, plus expenses, authorizing 150 days' pay during first year and 100 days in succeeding years; forbids any director having any financial interest in any business that may be adversely affected by the success of Muscle Shoals introducing concentrated fertilizers; empowers the board to exercise all the powers of the Corporation and prescribes that *no one may be a member of the board unless he professes a belief in the feasibility, wisdom and probability of success of producing and selling fertilizer as provided by the Act*; authorizes Corporation to appoint general manager for 10-year term, who shall select two assistants, one competent in fertilizer production, the other in power production and distribution, and all other employees, combined salaries

of three chief operating officers may not exceed $50,000.

Sec. 4—Authorizes $10,000,000 capital stock which is subscribed by U. S.

Sec. 5—Defines the broad general powers of the Corporation, including inter alia authority to sue and be sued, to lease or purchase personal property, and *to exercise the right of eminent domain.*

Sec. 6—Confers important special powers on the Corporation as follows:

(1) gives it complete possession of the facilities and properties at Muscle Shoals with direction to produce and sell nitrogen and its products for agricultural and military uses, and to sell *surplus electric power* as later defined, also gives authority to build and operate any additional plants at Muscle Shoals, Alabama, the Corporation may consider necessary; (2) directs it to make, distribute, and sell fertilizers, fertilizer ingredients and by-products of fertilizer manufacture; (3) authorizes it to make explosives, etc., for the War and Navy Departments at cost and requires it to supply the Secretary of War without charge all power necessary for the operation of locks, etc.; (4) directs it to produce, distribute and sell electric power under limitation later specified; (5) authorizes it to experiment in nitrogen production for military and agricultural uses and empowers the President to assign to the Corporation experts from other government services.

Sec. 7—Announces as the policy of government regarding distribution and sale of surplus power that (a) Muscle Shoals shall be used for fertilizer purposes in time of peace, and that no electric power shall be considered surplus that can be used profitably for fertilizer manufacture; that (b) surplus power shall be sold at the best prices obtainable, and that the Corporation may buy or build transmission lines, or sell at the plant to those who have transmission facilities; and that (c) the board shall run the steam plants in connection with the hydroelectric plants

Sec. 8—(1) declares it to be the policy of government to distribute fertilizers made at Muscle Shoals equitably among states, territories and possessions. (How can this be done to Maine, Florida, Hawaii and California as compared with Alabama and Tennessee ?) (2) provides that sales through intermediaries to farmers shall be under contracts that fix maximum prices. (Generally speaking, fertilizer manufacturers cannot fix resale prices, though co-operative associations and farm bureaus can;) (3) prescribes the basis on which the board shall fix prices which shall include production, marketing and distribution expenses properly chargeable against the particular product, and after five years shall have elapsed interest at four per cent., but then only on the investment of the United States in capital stock and not on any part of the value of a property that has already cost over $125,000,000; (4) defines purposes of Corporation to provide "plant food in abundance for agriculture and to users of commercial fertilizers at as reasonably low cost as possible, *and net profits* derived from sale of surplus electric power****shall be used toward that end for the first five years of the life of the Corporation"; (5) forbids sales of nitrogen products outside the United States and her possessions except to allies in case of war; (6) prescribes that for five years fertilizer and ingredients shall be sold at actual cost, cash in advance, f.o.b. cars, Muscle Shoals, and that preference shall be given (a) to farmers, farmer groups and farm organizations, and (b) to states and state agencies for resale to farmers, and *not until thereafter may sales be made "to private manufacturers, mixers and merchants of fertilizers";* (7) provides that after five years half of the power receipts shall go into Treasury but would be earmarked "Muscle Shoals Receipts," and after 10 years all power receipts would go into general funds of Treasury but still be earmarked.

Sec. 8, Par. E—Directs the board to begin making concentrated fertilizers by using the cyanamid process and the existing plant but also authorizes it to employ other processes of fixation; prescribed also that the board "shall construct and operate a plant or plants at Muscle Shoals for the production of phosphoric acid and/or potash to be combined with nitrates and nitrogenous products in the manufacture of a complete fertilizer."

Sec. 8, Par. F—Permits the Board for five years to donate five per cent. of the fertilizers producted to farmers through county agents, agricultural colleges, *or otherwise,* for experimentation, education and introduction. If in any year of the first five as much as 25 per cent. of the product remains unsold, the Board *may give away an additional 10 per cent.* of the unsold surplus, or a total of 15 per cent.

Sec. 8, Par. G—Gives the Board power to buy any fertilizer ingredients and to mix them with any other ingredients manufactured by the Corporation; in other words, puts the United States government, through this Corporation, completely in the fertilizer business.

Sec. 9—Confers complete control and possession of Nitrate Plants 1 and 2, all real estate and equipment, laboratories, the Waco Lime quarry, the Wilson Dam (No. 2), its power house, and all hydroelectric equipment, excepting only the locks, to the Corporation, and authorizes the President to transfer any other properties of the United States to it as may be deemed necessary or proper.

Sec. 10—Provides for the principal office of the Corporation to be at Muscle Shoals, and that its legal residence shall be the northern judicial district of Alabama.

Sec. 11—Requires filing of reports with the President and with Congress in December of each year, and provides for certified public accountants' audits.

Sec. 12—Reserves the right to the United States to take possession of the whole property in event of war, indemnifying persons whose contracts for either electric power or fertilizers may thus be invalidated.

Sec. 13—Empowers the Board to sell surplus electric power not used for fertilizer or munitions or in operation of locks or other navigation works, under contract for periods not exceeding 10 years.

Sec. 14—Declares the policy of the government to distribute surplus power from Muscle Shoals equitably among the states within transmission distance.

Sec. 15—To place the Corporation in a strong competitive position, expressly authorizes the Corporation to construct transmission lines from Dam No. 2 and its steam plant, with provision that political units or public or co-operative organizations not for profit, engaged in supplying electricity, if they construct their own transmission lines, may be contracted with for a term not exceeding 15 years.

Sec. 16—Authorizes completion of steam plant at Nitrate Plant No. 2 and installation of additional generating machinery at Wilson Dam, without appropriating funds for the purpose, with a view to the efficient use of all power generated.

Sec. 17—Authorizes the Secretary of War, under conditions described, to construct the Cove Creek Dam so that an increased amount of primary power may be developed at Dam No. 2 and others below; and authorizes the Federal Power Commission to compel contributions under the Federal Water Power Act by persons it may in future license to build dams in the Clinch or Tennessee Rivers below Cove Creek Dam.

Sec. 18—Authorizes the Secretary of War to exercise the right of eminent domain in any necessary way in connection with obtaining the site and constructing Cove Creek dam and the reservoir above it, and to make necessary agreements with all persons affected by this project; provides also that when Cove Creek dam, its transportation facilities and power house are completed, the whole shall be turned over to the Muscle Shoals Corporation for use and operation.

Sec. 19—Gives access to the Corporation, as a government instrumentality, to the files of the United States Patent Office.

Sec. 20—Provides penalties for misuse of public moneys, property, etc., for fraud on the part of Corporation employees as to the book records or other statements of the Corporation, and for accepting compensation or rebates involving any intent to defraud the Corporation or defeat its purposes. Fines ranging up to $25,000 or imprisonment up to 15 years, or both, are provided.

Sections 21, 22, 23 and 24 contain miscellaneous provisions authorizing appropriations, repealing conflicting legislation, making the act immediately effective, and reserving the usual right to amend.

Open Letter to Congress

In an effort to place the true facts of the present economic situation before Congress, Secretary Charles J. Brand addressed individual letters to the members of the Senate and House, of which some of the more important passages are quoted below:

"Your attention is respectfully directed to the amendment to the Norris Muscle Shoals resolution (Union Calendar N. 324—S. J. Res. 40) which has been favorably reported by the House Committee on Military Affairs. This amendment is in the nature of a complete substitute and strikes out all after the enacting and resolving clauses of the Norris resolution as it passed the Senate. It is, therefore, a new and distinctly separate proposal, on which public hearings have never been held.

"If this becomes law, the government will be *in the fertilizer business.*

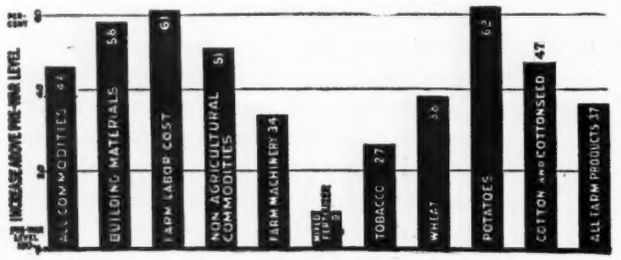
"Enactment will overthrow a cardinal American principle which encourages development of individual initiative, business leadership and our high standard of living—namely, the principle that the government should not do for the citizen what private enterprise can do equally or more efficiently.

"Many speak glibly of "cheap fertilizer"—but the industry is to-day furnishing the farmer the best fertilizer he ever used at the lowest relative price *he ever paid.* (See chart below).

"If the fertilizer industry were robbing the farmer, exploiting and profiteering on him—a fantastic fairy story that has been repeated so often during the Muscle Shoals debates touching on the need of "cheap fertilizer" that many uninformed persons have been led actually to believe it—then, under the peculiar

conditions surrounding the Muscle Shoals project, it is conceivable that it might be proper for the government to go into the fertilizer business to protect the farmer and ultimately the consumer.

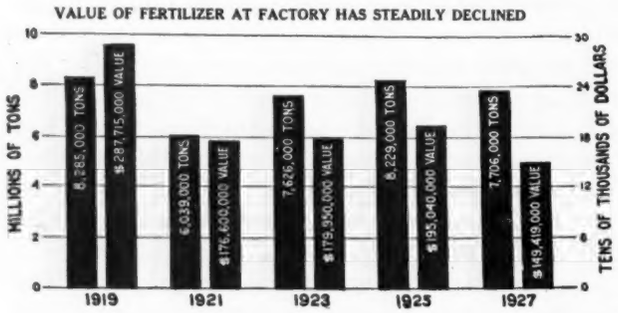
"But the industry has not profiteered. To the contrary, it has *deficiteered*. Since the farm depression began in 1920 the industry has lost $225,000,000 ($22,000,000 in the 1927 season alone), despite the fact that it is furnishing a product to the farmer that,



according to a survey made in 1923 by Dr. Sidney B. Haskell, then director, Massachusetts Experiment Station, returns an average of at least $3 for $1.

"The truth is that *of all important supplies bought by American farmers, the lowest priced is fertilizer*. It is relatively much lower than even the farmer receives for his products, and because of low farm prices Congress is rightfully giving serious attention to farm relief, but here is an industry with a lower priced product than farm products, threatened with another competitor—financed by the government itself—one that is to be given an unfair advantage through a subsidy.

"The chart below shows the relationship between production and value of fertilizers in the United



States. It is clear that the factory value of fertilizers has decreased almost continuously for the past nine years. The 7,706,000 tons of fertilizer produced in 1927 undoubtedly contained considerably more plant food than the 8,285,000 tons produced in 1919. Despite this fact, the 1927 value was only $149,419,000 compared with 1919 when the value was $287,715,000. What happened to the fertilizer industry between 1919 and 1921 is well shown by the comparison of tonnage columns; the same debacle that struck agriculture struck the fertilizer industry.

"Despite the misconceived notion that production of fertilizer by the government at Muscle Shoals will help the farmer, he eventually would be the loser. Admittedly all the fertilizer American farmers need cannot be made at Muscle Shoals, but the subsidized operation which is provided in the bill, would cripple the industry, thus hindering its service to the farmer and serving to stagnate its present progress, yet utterly failing to set up an adequate substitute."

Foreign Trade Opportunities

Chemicals	*30569	Bombay, India	Agency.
Chemicals, industrial	†30503	Buenos Aires, Argentina.	Do.
Do	†30520	Barmen, Germany	Do.
Do	†30581	Amsterdam, Netherlands.	Either.
Chemicals and dyestuffs	†30527	Vienna, Austria	Agency.
Essences, aromatic, for perfumes.	†30582	Paris, France	Purchase.
Lead, red and white, dry and paste.	†30503	Buenos Aires, Argentina.	Agency.
Paints lacquers, varnishes, and pigments.	†30583	Cologne, Germany	Do.
Paints and colors	†30581	Amsterdam, Netherlands.	Either.
Polish and wax, floor	†30504	Toronto, Canada	Agency.
Rosin	†30503	Buenos Aires, Argentina.	Do.
Solvents and bichromates	†30582	Paris, France	Purchase.
Borax, and boracic acid	*30653	Prague, Czechoslovakia.	Do.
Chemicals, industrial	†30601	Rio de Janeiro, Brazil	Agency.
Disinfectants, antiseptics, etc.	†30654	Mexico City, Mexico	Either.
Fertilizers	*30673	Lennoxville, Canada	Both.
Fertilizers such as calcium cyanamid, potassium chloride, and superphosphate.	†30662	Athens, Greece	Agency.
Glucose	†30660	Cairo, Egypt	Do.
Mining chemicals	†30664	Winnipeg, Canada	Do.
Oil, mirbane	‡30655	Sydney, Australia	Do.
Pigments, varnishes, lacquers, and stain for shoes and leather goods.	†30645	Sao Paulo, Brazil	Both.
Polish, metal and furniture	†30659	Alexandria, Egypt	Agency.
Shellac	*30652	Caracas, Venezuela	Purchase.
Sulfur	*30657	Paris, France	Agency.
Tanning materials, and naval stores.	*30650	Mannheim, Germany	Do.
Ammonium phosphate and other fertilizers.	*30785	Hamburg, Germany	Agency.
Aniline dyes	*30783	Berlin, Germany	Both.
Arsenic, white and yellow	*30776	Baghdad, Iraq	Purchase.
Biological, pharmaceutical, and aseptic products.	*30781	Santo Domingo, Dominican Republic.	Agency.
Borax	*30776	Baghdad, Iraq	Purchase.
Calcium carbine	†30761	Montevideo, Uruguay	Agency.
Glue	†30758	Oslo, Norway	Both.
Naval stores	†30761	Montevideo, Uruguay.	Agency.
Paints and enamels, automobile.	*30772	Rosario, Argentina	Both.
Phosphate, pyro	*30752	Dublin, Ireland	Agency.
Phosphate rock	*30788	Alicante, Spain	Do.
Rosin	†30782	Sao Paulo, Brazil	Both.
Rosin and turpentine	*30784	Cologne, Germany	Agency.
Do	*30786	Sao Paulo, Brazil	Do.
Soda ash for glass industry	*30778	Dresden, Germany	Do.
Spraying materials, agricultural.	†30787	Hobart, Australia	Sole agency.
Cellulose lacquers and materials.	*30901	Santa Marta, Colombia.	Purchase.
Chemicals, especially artificial aloes and zinc oxides.	*30853	Bombay, India	Both.
Chemicals, industrial and agricultural.	*30934	Paris, France	Purchase.
Dental and surgical chemical specialties.	*30868	Santo Domingo, Dominican Republic.	Sole agency.
Fertilizers	†30916	Milan, Italy	Either.
Match manufacturing materials.	*30903	San Salvador, Salvador.	Purchase.
Neon gas	*30912	Melbourne, Australia	Do.
Paints	†30916	Milan, Italy	Either.
Paints, enamels, and varnishes.	*30857	Buenos Aires, Argentina.	Agency.
Paints, good quality	*30905	Maracaibo, Venezuela.	Do.
Saccharine, granular	†30904	Cairo, Egypt	Do.
Varnish and tanning materials.	*30934	Paris, France	Purchase.

The Fallacy of Selling

"Acid Proof" Paints

to the Chemical Industry

By Fred D. Hartford

THE Federal Trade Commission recently gave relief to the smokers of the country when it ordered that "Tampa Cigars" should not be so branded unless they were manufactured in or near Tampa, Florida, that Havana cigars should not be labeled as such if they are not composed wholly of tobacco grown in Cuba, and that cigars unless actually imported into the United States must not be sold as "Imported". Whenever the ranks of those who perpetrate such deceptions are depleted the attention of the Commission is respectfully called to the "Acid-Proof" paint makers of the country. Their number was once legion; it is now greatly lessened, and by the time the Commission can get around to them it is to be hoped that the last one shall have forsaken the error of his ways.

Practice Dying Out

Reputable paint makers with genuine laboratories at their disposal have long since refrained from advertising their paint as "acid-proof". However, many paint salesmen and a small contingent of paint manufacturers have yet to discover that "acid-proof" paint and "acid-proof" paint salesmen are the standing jokes at all chemical plants. The principal business of acid in industry is to corrode, char, dissolve, disintegrate, or break down certain substances and for the "acid-proof" paint maker to pit his paint film unqualifiedly against the most vicious substances made by man betokens his reckless disregard for chances of repeat orders. In most plants he doesn't get even a hearing.

The adjective "proof" is defined as "capable of resisting successfully," or "impenetrable," and is applicable to that which has been proven by trial or test to withstand something, as expressed, for example, in the words "waterproof" and "bullet-proof". Tantalum, gold, platinum, chromium, lead, and iron are typical of the metals that resist some acids with practical success, yet, since they are readily soluble in other acids propriety forbids the use of the unqualified term "acid-proof" in connection with them. To apply the term "acid-proof" to a paint film perhaps 1-100 of an inch thick composed usually of a flammable, unstable organic substance that can be quickly destroyed by the application of any one of half a dozen acids is manifestly absurd.

The makers of alloy metals for use in chemical apparatus and equipment were once just as careless as the paint makers in calling their wares "acid-proof." However, after several disastrous experiences they learned to state in their literature not only what corrosives their particular metal will resist but also the concentration and temperature thereof. Some of them even go far as to specify the rate at which corrosion in various acids takes place so that the designer or purchaser may know how thick to make this material or how long a particular piece of apparatus should last. These alloys, no longer labeled "acid-proof" but "acid-resisting," are usually immersed in or revolved at high speed in liquid acid, conditions under which paint would exhibit a very temporary existence, to say the least.

Definition of "Acid-Proofing"

The Joint Committee on Standard Specifications for Concrete and Reinforced Concrete uses the word "acid-proofing" and immediately defines it as "the treatment of a concrete surface in order to provide resistance to the action of acids." "Acid-proofing" of concrete may consist in treating the concrete surface with chemicals which alter the composition and density or in coating the surface with a film of resistant paint. Since the binding element in concrete is somewhat basic in character and readily digested in many acids, plant men will welcome information for rendering concrete for tanks and floors truly resistant to commercial acids.

The total quantity of acids manufactured in the United States per year is difficult of calculation because we are not agreed upon as to the acids to be included in the summary nor at what concentrations to figure the weights, doubtless, however, the amount is many million tons. If we limit ourselves to the three principal mineral acids, sulfuric, muriatic, and nitric we can get down to pretty definite figures. *Chemical and Metallurgical Engineering* for September

1927 gives the annual production of these three as follows:

Sulfuric, 7,000,000 tons of 50 degree Beaume (62.18% acid.)

Muriatic, 230,000 tons of 20 degree Beaume (31.45% acid).

Nitric, 153,000 tons of 36 degree Beaume (52.30% acid.)

This enormous total of 7,500,000 tons per year might be objectified by stating that it would require for its transportation sixteen trainloads each consisting of forty 40-ton cars for every working day in the year.

The Annual Paint Bill

In order to get at the amount of paint used in the acid industries in the United States and Canada let us suppose, for example, that the maintenance costs in the plants manufacturing these acids is $1.00 per ton of product, also that a similar amount is made necessary in the plants using the acids, and further that five cents of each maintenance dollar is spent for paint. The annual paint bill of the acid producing and consuming industries is then $750,000. Not so much in these days when a million dollars' worth of business is considered small, yet the paint makers go after it just the same.

It is possible to get an idea of this paint bill in another way. Let us assume that the typical mineral acid plant costs $15.00 per ton of yearly capacity, including packages, tank cars, and storage—all requiring paint—then the mineral acid manufacturing equipment of the country would be worth some $115,000,000. Again, suppose that the parts of the consuming plants where acid damage may be done amounts to as much more. Then the potential field of the makers of high grade acid resisting paint is the protection of $230,000,000 worth of equipment. If about one half of one per cent. per year of this valuation is spent for protection then we have the acid makers and users spending $1,150,000 for paint. This half of one per cent. may be more readily visualized if we picture the owner of a $10,000 house spending $50 a year for paint for repairs, an amount which will not allow for many frills. At any rate it is safe to say that between half a million and a million dollars per year is spent for paint to offset the destructive action of commercial acids on various structural materials tending to shorten their normal life.

The Seller's Argument

Naturally the paint maker in catering to the acid maker and user will be tempted to dilate upon the qualities of resistance toward acids that his particular brand may possess. His paint may be made from a formula that has been evolved from long paint making experience combined with a series of tests paralleling actual plant conditions, or it may be a transplanted bridge paint, or again, it may be the panacea of an "old acid man who has been through the mill and knows what's what."

Paint in and around an acid plant may fail in any or all of the following ways: (1) by the disappearance of the vehicle due to ordinary atmospheric action which leaves the pigments so unprotected that they may be blown, washed, or rubbed away, (2) by the penetration of the film by corrosive gases resulting in the formation of sulfate, etc. under the film whereby the latter is pried off the material coated, (3) by the splashing of product acid directly on the paint. In the last case the paint simply vanishes. Under ordinary conditions it is practically impossible to spread a continuous paint film that will remain continuous. Vibration, the expansion and contraction of the materials under the paint, mechanical abrasion, the loss of elasticity of the paint film—any one of these sooner or later opens the way for corrosion to set in. The fact that a pigment is acid resisting does not render the paint so.

The life of a paint may be defined as the time between its application and the date when it ceases to give the protection for which it was applied and fails to insure a certain life to the structure or machine. Again, paint may be considered to have failed when it fades or gets streaky and detracts from an otherwise smart appearance of the plant although it may still give protection. Unfortunately such definitions are difficult to apply to specific cases yet the purchase of paint usually rests on their interpretation by the plant superintendent or engineer.

Qualifications of Good Paint

The qualifications of a good paint for an acid plant may be itemized as follows: (1) it will give reasonable protection to the various structural materials for a period of from one to four years depending upon the severity of conditions—those around diluting apparatus for example being more severe than in the sulfur burner room; (2) it should be adaptable to either brush or spray application in the hands of average plant workmen—the number of skilled painters in acid plants being notoriously small; (3) it should retain a reasonably uniform color during its useful life; (4) it should preferably be light in color. This final requirement is an important one from a working condition and heat absorption standpoint although it practically bars the bituminous paints.

There are numerous proprietary brands of paint that give reasonable satisfaction in plants making and using acid. The various combinations of lead, zinc, aluminum, linseed oil, Chinawood oil, and varnish together with the bituminous paints have their particular places where they will render satisfactory service. There is no one best paint or cure-all. So far no lacquers have been developed that have acid resistant qualities proportionate to their cost.

When the proper paint for a certain plant condition is found it should be applied to all parts in that vicinity requiring paint. A condition illustrating

this was the result of the recent adoption of a code of colors for distinguishing the various lines of piping in a certain plant. Unfortunately the special paints had to be chosen for color rather than for suitability to plant conditions. In a few months the red had turned black, the blue and the green were of the same aenemic tone, while the yellow and the white had both turned to dark brown where they had not disappeared entirely. In cases where it is necessary to distinguish piping it is apparently best to paint it all with the best paint for that location and then to stencil the name of the product directly on the pipe or on a board attached to the pipe. The piping of an acid plant is usually in a state of continual repair and the trouble of keeping little dabs of various colors and the brushes ready is obvious. Stencils for this work should be made so that one man, preferably a pipefitter, can perform the work.

Unpainted Structural Steel

In some cases structural steel in a plant is best left unpainted as the film of rust formed may inhibit action of atmospheric conditions better than paint. This is illustrated by a certain steel building housing a mechanical furnace that leaked considerable gas. The steel was completely covered with a film of rust that was quite adherent. Careful examination revealed the fact that in the worst places the corrosion had penetrated to a depth not to exceed 1-32 of an inch while in most places the reduction of cross-section was of no moment. The steelwork was very thoroughly cleaned with scrapers and wire brushes and given two coats of a high grade bituminous paint during dry hot weather. The result was all that the eye could desire. In six months the paint had completely disappeared and a second coat of rust had taken its place. Annual examination of this steelwork has revealed that the coating of rust is an excellent protector and prevents any further deterioration. The above condition occurred in a locality where the average relative humidity is less that 60% and consequently there was little condensation of moisture on the steel. Where the humidity is higher or where the process evolves large amounts of water the condensation on the steel might be sufficient to keep the rust film continuously saturated and serious corrosion might result. In such cases frequent repainting may be the only palliative.

The foregoing example brings out the point that under some conditions the designer may do without paint and coat his steelwork, so to speak, with a film of steel 1-32 of an inch in thickness by increasing the thickness of his sections 1-16 of an inch. This will usually cost no more than two coats of good paint. Where a productive process must be shut down for repainting it may be better to make the cross-sections of materials in buildings and apparatus sufficiently heavy to take care of all possible corrosion for the life of the structure or equipment and so avoid shut-downs.

Paint may be of no value under certain acid conditions illustrated by some types of ore roasters and sulfur burners where the brickwork is retained in place by steel bands or shells. The steel is usually well painted before the brick is set in place. In operation the brickwork probably becomes thoroughly permeated by sulfur trioxide that does no harm as long as the apparatus is kept hot. If, however, the brick is allowed to cool down condensation sets in and the acid formed attacks the iron immediately. The film of sulfate formed in this case is no protection whatever, the corrosion is progressive, and there is no remedy usually except to renew the steel. The sulfate formed expands far beyond the original volume and if restrained may even burst the steelwork. In some cases curiously enough the sulfate retains the exact pattern of the original iron yet expanded many times. Where temperatures are not excessive steel in places such as these may be protected by a sheet of lead or some resistant alloy interposed between the brick and the steel.

It is the average paint salesman who doesn't even suspect any of the principles of chemistry or chemical manufacture who brings disfavor to his product and to his house. The following case will doubtless recall to plant men a certain type of paint monger they all have met. This particular salesmen by his majestic presence flimflammed the watchman and got past the gate, strode unannounced into the master mechanic's office, and slammed down on the latter's desk a small piece of pipe painted black.

Exploding the Theory

"There," he avowed in stentorian tones, "is just what you've been looking for. A real acid-proof paint! There is no argument about it. This is the one and only genuine 100% acid-proof paint. Why," he paused for breath, "the X. Y. Z. Company just across the street there, have had that sample in their laboratory for two weeks and haven't been able to even take the gloss off. On the strength of this one little sample they just gave me an order for ten barrels, think of it, ten barrels, twelve hundred dollars. This is the real acid-proof paint. I've sold paint all my life, my father sold paint before me, and while I don't know anything about making sulfuric acid I do know that this is just the paint you need. Brother, I'd be wasting your time and mine if I sold you less than five barrels as a sample. One hundred and twenty dollars for a fifty gallon drum delivered right to your door, the whole five will cost you only six hundred dollars. You can't make a mistake in buying this paint, we stand right back of it. I don't want to appear insistent but I've got my quota to fill so let me suggest that you call your purchasing agent and I'll take the order right in to the office with me."

A little further talk confirmed his statement that he knew nothing about chemistry, either acid or paint. Moreover, he had never handled a paint brush, he had had no industrial experience, and he finally

confessed that the nature of the pigments, vehicles, and dryers used in his wares was a deep, dark secret.

Undaunted the salesman insisted that his paint was absolutely proof against any and all kinds of acids and that the paint on the piece of pipe was the sole criterion. "The X. Y. Z. Company laboratory has exhausted its skill on it. It needs no eulogy, there it stands in its pristine glossy splendor."

The salesman took a seat and leaned back complacently.

"Do anything you want with that sample. I'll stand or fall by it. You can't take that paint off with anything but a file."

The master mechanic led the salesman down to the plant laboratory and stated the case to the chief chemist. The latter carefully examined the sample, warmed it slightly over the gas flame, and then let a few drops of 20% oleum trickle gently over the surface of the pipe. As all acid men can readily imagine the paint accompanied the acid down the sink. The salesman departed forthwith, probably to get a new sample.

A test such as the foregoing is, of course, of no practical value except to get rid of a pestiferous high pressure order getter who knows nothing of paint or of salesmanship. On the other hand this particular paint may have had some very excellent qualities and the master mechanic perhaps did his company an injustice by not testing the paint in the proper manner. Such salesmen are the worst enemies of paint manufacturers who are giving genuine service to industry.

The Fate of the Sample

Sometimes a paint salesman will leave a bucket of his paint as a sample for the chemical company to try out as it sees fit. Everyone familiar with average plant conditions knows that the sample will lie around the office awhile, then it will repose in the paint shed several weeks or months longer until the painter gets around to it. Unless the matter is vigorously pushed by someone in authority the paint may finally be used in a place where the results obtained will mean nothing, the name of the paint may sink into oblivion, or even the place where it was finally used forgotten. As a general rule the test is of no value to anyone and if the paint is finally ordered the order has no connection with the sample or the test.

The following suggestions to paint salesmen are the result of some years of experience in buying and using paints and are offered with the hope that their adoption may result in benefit to both paint maker and user:

(1) The salesman should know something about the qualities that the acid maker and user expect of a paint.

(2) The salesman should also be a demonstrator who can put on his overalls, go out in the plant, and put on some of his paint in the proper manner. Every master mechanic will be glad to donate a few square feet of tank, piping, walls, or apparatus for a test. He will also be glad to know first hand just how the surface to which the paint is to be applied should be prepared for he knows that conditions *under* a paint film often influence its life more than the conditions *above* it. He will also be glad to know the best type of brush, how many square feet per gallon the paint will actually cover, how much area a painter should coat in a day, how often the paint should be stirred, and other points that naturally come up while on the job.

Another feature of the above arrangement is the contact that the salesman is often able to establish with the painter foreman. Unless the latter is convinced that the use of this particular paint will reflect credit on himself and his men he may kill the chances of the best paint that was ever made.

(3) The demonstrator should stencil in 1″ or 2″ letters over or beside his sample panel a legend reading something on the following order:

SAMPLE OF PERFECTION PAINT
MADE BY THE A. B. PAINT COMPANY
OCT. 1, 1927 TEST NO. 348

In this way he will be more than identifying his paint, he will be advertising his wares to every official and visitor in the plant. He will be finding out for himself and for the master mechanic where his paint is suitable and where it is not. The maintenance department of a chemical plant is usually so busy that it will appreciate the real service contained in a test of this kind. A few large chemical companies can test out paints in this manner for themselves but most manufacturers do not do it. Paints are usually bought without any sound knowledge of their suitability for given conditions.

The salesman would perforce be burdened with a kit of tools, stencils, and other paraphernalia and he would make fewer calls per day. On the other hand he might sell a great deal more paint than he does at present.

Truth in Advertising

There are many paints that offer a good degree of protection and their makers are learning that the truth concerning their properties is the best advertising. One manufacturer recently insured the admiration and respect of all plant men when he stated that his material was "resistant to mild acids." Every chemical plant man who knows first hand the effect of acid on paint will respect such candor and restraint. His respect will also govern him when he places his orders for paint.

By the end of the year more than a dozen carbon black manufacturing plants will be operating in Texas, most of them in the Panhandle district, according to information received by the oil and gas division, Texas Railroad Commission. Only residue from natural gas, after it has passed through casinghead gasoline plants, may be burned for making carbon black, under the law of this state. Last year total production of carbon black in Texas was 20,174,409 pounds. It is expected it will exceed 75,000,000 pounds in 1928.

Future Solvent Developments

Continued Expansion in the Lacquer Field is Contingent on New Solvent Development, a Lack of Which Was Quite Noticeable During the Past Year

By Donald B. Keyes
University of Illinois

VERY few major developments have been made in the lacquer solvent field during the last year. It is believed, however, that some rather outstanding developments will be made within the next few years. It is the purpose of this article to indicate in a general way where these developments may occur.

This first and very necessary type of solvents for lacquers has been developed to a marked degree. It is very doubtful if the future will produce a more satisfactory low-boiling solvent than the present well-known combination of anhydrous ethyl alcohol and anhydrous ethyl acetate. This combination is a powerful nitrocellulose solvent and one of the best universal resin solvents known. It has many other virtues which need not to be repeated. Attention should be called to the fact that this product is made in enormous quantities and sells at a price below any other common lacquer solvent.

In this group are the two famous solvents, butyl alcohol and butyl acetate. Their production on a large scale has been one of the vital factors in the development of the lacquer industry.

Recently the production of synthetic (primary) amyl alcohol and amyl acetate on a commercial scale has attracted considerable attention. These products are similar to the old fusil oil products. In the opinion of some, these amyl compounds are superior to the butyl compounds. This is largely due to the higher boiling point of the amyl compounds, thus putting them in the high boiling solvent field as well as the medium boiling field. It is not exactly clear what the outlook is for these synthetic products. It can be safely said, however, that once the selling price of amyl alcohol is set at a figure decidedly below the market price of butyl alcohol, amyl alcohol will meet very little sales resistance in competition with butyl alcohol.

One other medium boiling solvent, the mono ethyl ether of ethylene glycol (cellosolve) has been produced on a commercial scale in recent years. This solvent is free from the strong and penetrating odor of the amyl and butyl compounds. This is a marked advantage. Unfortunately, it is not as excellent a resin solvent and is, therefore, somewhat handicapped. If the price can be made attractive this solvent will undoubtedly enjoy an even more extensive use.

It is believed that new solvents of this medium boiling type will be developed from an entirely different viewpoint.

There are several major faults in the modern lacquer that have been pointed out before. First, too little of the lacquer remains as the film and too much is lost by vaporization. Second, the only constituent that is a film producer is the nitrocellulose, the resin film has little or no film strength. Third, the volatilization of the solvent from an unpigmented lacquer produces a porous film that is easily broken down by severe weather conditions.

The ideal solvent would seem to be one, or a combination of several, that would react to form a synthetic resin or plastic with actual film strength. The organic chemical literature is full of possible examples. Such a polymerigation or reaction should take place after the lacquer is sprayed. It would be feasible to use a higher "drying" temperature than is now common, and a catalyst to promote the reaction might be added just prior to spraying. The advantages of such "reacting" solvents are evident and their production would go a long way towards solving present lacquer difficulties.

High Boiling Solvents

In this class several excellent nitrocellulose solvents have been used commercially. A brief list might include the following: ethyl lactate, butyl proprionate, diacetone alcohol, ethylene glycol monoethyl ether acetate (cellosolve acetate) and ethylene glycol mono butyl ether (butyl cellosolve). All have their virtues but here again it is believed future development will be along different lines.

It is quite possible that there will be found "reacting" solvents in this group, similar to those

already described, which will produce upon "drying" a synthetic resin having film properties. A modification of this idea is already partially developed. This is called a "liquid" resin which hardens on "drying." Such a liquid resin must also be a high-boiling solvent and therefore comes under this class. It should be noticed that such high boiling solvents would materially increase the lacquer flow without producing stickiness in the final film. The result would be a varnish-like film, with real body and smoothness of surface.

Still another variation of this general idea has been tried. It may be possible to discover a high boiling solvent, probably in the plasticizer class, which will combine with the resin added to form a film with the desired tensile strength. Numerous attempts have been made, with some success, to add a miscible oxidizable oil which will react with the oxygen in the air and combine with the resin present to form a varnish-like film.

The first step in the development should be to produce a high boiling solvent or plasticizer which will delay the hardening of the film without eventual tackiness, thus obtaining the much desired flow.

The Common Diluents

The common diluents are the aromatic hydrocarbons, benzol and toluol. They also may be considered as resin solvents. The aliphatic hydrocarbons obtained as petroleum fractions have not been popular because of their incompatability with nitrocellulose solutions and solvents. It is common knowledge that the various unsaturated hydrocarbons produced in the modern cracking products are far more soluble in alcohols and esters. It is reasonable to suppose that such cracked products will be able to compete in the near future with the more expensive aromatic hydrocarbons.

The products produced recently by the partial oxidation of petroleum fractions should prove to be excellent diluents providing their odor can be modified to the point where it is not objectionable.

It may be stated in conclusion that the present lacquer solvents are quite satisfactory for the lacquers now in use but if the lacquer industry is to expand materially new solvents must be found and the trend of this development will be along entirely new lines.

Canadian import statistics compiled by the Dominion Bureau of Statistics reveal that a decided gain has been made in the imports of carbon black and zinc white during February. The total imports of carbon black in February, 1928, amounted to 901,147 pounds valued at $59,880, while the quantity the same month the previous year was 743,035 pounds valued at $49,569. Totals for twelve months, ending February, 1928 and 1927 were, respectively, 9,885,107 pounds valued at $656,033 and 6,344,611 pounds having a value of $462,923. Zinc white imports increased from 1,161,433 pounds valued at $77,481 in February, 1927, to 1,431,156 pounds valued at $90,483 for the same month this year. The total imports for the twelve months ending February, 1927, and 1928, were, respectively, 13,589,937 pounds valued at $958,133 and 16,633,514 pounds valued at $1,100,906.

New Incorporations

B. &. K. Chemical Co., Wilmington-Corp. Svc. Co., Wilmington 130,000.

Cholet-Vanderhoef, New Brunswick, chemicals-Edmund A. Hays, New Brunswick 50,000.

Allen Chemical Products, Inc. Elizabeth—Filed by the company 8000 shs com.

Kimex Chemical Co.—E. Goodell, 2 Lafayette St. $20,000 pf. 1000 shs com.

American Chatillon Corp., Wilmington, artificial silk—Corp. Trust Co. of America, Wilmington $10,000,000, 1,000,000 shs com.

Willis Varnish and Color Co., Inc. Jersey City—Karkus & Karkus, Perth Amboy 25,000.

S. & P. Products Co., Albany, malt extracts, etc.—J. F. O'Brien, Albany 30,000.

Butler, Beans & Susie, Bloomfield, chemists, druggists, etc.—Peck & Rawson, Englewood 10,000 shs com.

Quiz, chemical preparations—E. W. Barto, 2 Park Ave $30,000 pf 600 shs com.

New Chemical Co.—W. H. Powers, 320 5th Ave., Manhattan 100,000.

H. K. Plastic Art Supply Corp., paints, dyes—A. J. Rubien, 1440 Broadway 150 shs com.

Nobgo Co., Inc., York, ores, mineral—Corporation Trust Co. of America, Wilmington $500,000, 1,000 shs N. F.

Kenmer Laboratories, Inc., New York, soaps—Howard E. Lynch, Dover 100,000.

Serpo Products Corp., Great Neck, paints, oils—Jentes & Hames, 2 Lafayette St., Manhattan 10,000.

Armstrong Chemical Co., East Syracuse, oils, pharmaceuticals—M. R. Jeffert, Syracuse 10,500 shs com.

Apco Chemical Co., Newark—Furst & Furst, Newark 1,000 shs com.

Nevada Silica Corp., Philadelphia—Corp. Trust Co. of America, Wilmington 3,000 shs com.

Van Kapff's Saure-Therapie Ltd. Montreal, Que., 20,000 shares of no par value, chemicals and drugs. Max Berfeld, Harry Batshaw, Joseph Helal.

Progressive Chemicals Ltd., Montreal, Que. 5,000 shares of no par value. Charles A. Smart, James R. Nesbit, Stephen J. Lehuray.

Fraser River Pulp and Paper Ltd., Montreal, Que. $750,000 Rufus C. Holden, Frederick T. Collins, Charles T. Ballantyne.

Hannan Varnish Company, Ltd., Waterloo, Ont. $40,000, William B. Hannan, Elizabeth W. Hannan, Robert A. Purves, and others.

Maltby Ltd., Toronto, Ont. $50,000, and 10,000 shares of no par value, drugs and medicines. Norman W. Rudolph, John E. A. Donaldson, Earl H. Willows.

Puritan Pharmaceutical Company St. Louis—Toronto Ltd. Toronto, Ont. 1,100 shares of no par value. Herbert G. Stapells, Ralph Salter, John Entwistle.

The Tremco Manufacturing Co., Canada Ltd., Toronto, Ont. 500 shares of no par value, paints, and varnishes. Norman E. Strickland, Frederick A. Burgess, Ernest C. Facer.

Chipman Chemical Ltd., Winnipeg, Man. $50,000 and 2,333 shares of no par value. Glenlyon C. McDonald, Charles W. Tupper, Robert C. Irving.

Atlas Textile & Leather Ltd. St. Laurent, Que. $50,000 textiles James H. H. Robertson, Douglas C. Abbott, Kathleen M. Walsh.

Hilder Rubber Company, Ltd., Toronto, Ont. $15,000 shares of no par value. Albert E. Hilder, Arthur C. Boyce, Frederic J. Hanna.

Standard Textiles, Ltd., Toronto, Ont. $100,000, Gerald Murphy, Clifton H. Lane, Edna Dawson.

No Tarnish Products Corp., Philadelphia, paints, varnishes, lacquers. 500 shares of no par common stock.

Thymodine Co. chemicals—N. Shulman, 305 Broadway 50,000.

Old Hickory Chemical Co., Wilmington chemicals. $100,000 Chas. Copeland, Wilmington.

Acquapruf, Inc., Bradley Beach, anti-freezing liquids—Andrew F. Murray, New York $5,000.

American Enka Corp., Wilmington, artificial silk, other fabrics—Corp. Tr. Co. of Am. Wilmington $500,000 shs com.

America Products, chemicals—Gould & Wilkie, 2 Wall St. $312,000.

Schofield-Donald Co., chemists—D. Dev. Harned, 154 Nassau St., $20,000.

Cosmic Color Co., Wilmington, colors, chemicals—Corp. Tr. Co. of Am., Wilmington $50,000.

Peaslee Gaulbert Paint and Varnish Co., New York, import, export—Corp. Trust Co. of Amer., Wilmington $25,000.

PALM OIL *in* SUMATRA

By K. R. F. Blokzeijl
Our East Indian Correspondent

DURING the last decade strenuous and successful efforts have been made to increase the area under cultivation of West African oil palm (Elaeis guineensis) in Sumatra and South Acheen, D. E. Indies. Merit is due largely to a Belgian rubber concern, 'Societe Financiere des Caoutchoucs' which by the end of 1914 already had a planted area of some 5,600 acres. When this pioneer company had conquered nearly all obstacles hampering oil palm growing, several other companies have started producing on a large scale since 1918. As a result, the estate cultivation extended rapidly and on a much sounder footing than before. Whereas originally the view was held that the industry could be made remunerative on a low capitalized basis, the new companies worked on an intensive scheme with large amounts of capital. To produce large and continuous harvests per acre with small transport expenses and a high yield of oil, it is necessary to thoroughly clear the soil, to watch a careful upkeep of plantations, to build a network of narrow gauge railways for transport and a large and well equipped mill. Thus a large amount of capital is invested in the palm oil industry at the present time, and it is already clear that the venture will be crowned by success.

Rainy Climates Unfavorable

Except on the East Coast of Sumatra and in South Acheen, the cultivation of the oil palm in the Dutch East Indies is still of slight importance. Regions with decided rainy seasons are found less suitable for this industry, since harvest time is thus limited to certain periods. This exerts an adverse economic influence on the trade.

As regards soil, climate and transport facilities, the East Coast of Sumatra offers excellent conditions for oil palm growing, and it seems quite likely that it will be limited chiefly to this region, though a further extension in South Sumatra is not improbable.

The palms flourish so well in Eastern Sumatra that plantations five years old produce sufficient fruit to justify starting a factory. Most of the estates are provided with narrow gauge railways to which the fruit is carried by the harvesting gangs. These are usually Javanese coolies who work without constant supervision and cut and carry from sixty to seventy heads of fruit per man per day. Work goes on seven days a week with two holidays per month. As a result of the cheap and excellent labor, the comparatively small amount and cost of European supervision, the higher yielding palms and high percentage of oil recovered, some plantations are already producing a high quality of oil, shipped in barrels and landed in Europe at an all-in cost of under 21 pounds sterling per ton.

Progress During Recent Years

Originally very primitive small factories were built, fitted with simple apparatus, yielding a moderate return of oil with a high percentage of free fatty acid. Only in the last five to six years has the building of large modern mills been undertaken. These are naturally far more costly than the first but yield a much greater return of oil, poor in f. f. a. (28 per cent. of oil from the fruit with 2 to 3 per cent. f. f. a.). The process in the factories is briefly as follows:

On arrival at the factory, the heads of fruit are sterilized in large drums by steam under low pressure. The bunches are then threshed. The fruit which is not fully developed and has been left on the bunches is then discarded, whereas the sound fruit is taken to the first press. Here, after preparatory heating in a stirring bin under pressure (75 atmospheres) the bulk of the oil is expressed (usually the Krupp revolving press being used). Thereupon the whole mass goes to the depulpers where the pulp and stones are separated. The pulp then goes either to the second press where, under pressure of 450 atmospheres, it yields a further small percentage of oil, or otherwise it is brought to the extraction apparatus in which, by solution in benzine fumes, the remaining oil is extracted. Subsequently the oil is conducted to the collecting tanks and only must be clarified before it is ready for shipment. The stones go from the depulpers to the driers and thence to the crushers (centrifugal or roll crushers); the kernels and shells are then separated.

Through the experience which is being gained by constant production the process of oil manufacture is steadily developing.

The problem of packing and despatch of palm oil has not yet been completely solved. Experiments have been made with various types of containers, namely, wooden barrels of 600 and 180 litres capacity, steel drums (in some cases collapsible), and even in kerosene tins. Of all these, the 180-litre barrels

Young oil palms on an estate in Sumatra with the manager's bungalow shown in the background.

proved the most satisfactory; the cost of packing, however, remained too high, while there was often considerable leakage en route.

The first shipment of oil in bulk (i. e. without containers) left Belawan, Deli, in March 1925, and was quite successful, the increase in free fatty acid during transit being negligible. At the first attempt the loading process was very slow, averaging about twelve tons per hour. But, since 1926, two 500-ton tanks have been built at Belawan harbor by the 'Societe Financiere', and it is now possible to load the oil into ocean going steamers at a rate of 60 to 70 tons per hour. The oil supply from the estates situated on the Deli railway is transported in tank trucks and on arrival at Belawan pumped into the above-mentioned tanks.

Handicapped by Ocean Voyage

East Indian palm oil has to suffer a longer sea journey through a hot climate than West African oil, but in practice it is found that owing to the high quality of the oil it does not in fact deteriorate appreciably, and although a considerable quantity was lost in earlier shipments through leakage from barrels, this has now been remedied through experience gained or by shipment in bulk. We have therefore to consider only differences in cost of freight and interest on goods in transit. The latter point will always be against the East, but the freight charges do not differ greatly.

The following table drawn up from data collected by the Statistical Bureau of the Department of Agriculture illustrate the rapid development of the industry during recent years:—

Year	*No. of Estates submitting reports*	*Area under Cultivation Acres*		*Exports (unit: tons of 1,000 Kilos)*
		Total	*Producing*	
1922	62	40,200	9,400	3,800
1923	58	45,600	11,300	3,870
1924	59	58,400	12,300	4,900
1925	61	76,500	24,000	8,700
1926	52	71,300	27,100	12,200
1927	..	.....	.....	17,000

It is deserving of notice that the returns in the second, third and fourth column are not complete; among others the figures of the extensive plantations of the 'Handelsvereeniging Amsterdam' (Amsterdam Trade Association) are not included. This explains the apparent decrease for the year 1926.

The export of palm oil increased from 578 tons in 1919 to roughly 17,000 tons in 1927. Shipments during the last three years had the following countries:

	1925 Tons	*1926 Tons*	*1927 Tons*
U. S. America	2,384	5,061	7,372
Holland	1,598	3,674	5,602
Great Britain	1,286	2,045	3,332
Germany	1,355	943	201
Japan	271	102	70
All other	184	437	515
Total	7,076	12,262	17,092

These statistics show, among other things, that exports to the U. S. A. have considerably increased. This increase coincides with the introduction of the

Method used for transporting oil bearing palms to the oil mills.

shipping of the oil in bulk. Exports both to Holland and England have also progressed notably; in Germany and Japan, on the other hand, demand has diminished.

The above mentioned returns offer every reason to expect that exports in the next few years will once more materially increase. For 1931 it is estimated that shipments will be as large as 30,000 to 40,000 tons, a quantity which represents a handsome share in the World's production.

RUSSIA—

*Its Trade Possibilities**

WHEN surveying the question of what interest the world as a whole, especially the world's chemical industry, has in Russian foreign trade, as concerns both the importing of foreign goods to Russia and the exporting of Russian goods abroad, a picture of the Russian government must be taken into consideration. This government as developed since the Revolution of October 1917 differs as is generally known in its very foundations from the structure of the governments of other countries. The principle of the system in operation in Russia is the idea, and the carrying out of this idea as far as it is possible, that all means of production and raw materials, as well as the intermediate and finished products prepared from these, are the property of the state, that is, of everyone in general. The carrying out of these socialistic theories is naturally not easy to accomplish by direct orders and commands. The Russian government has learned in the course of its ten years' existence that a socialistic regime is not erected by a sudden upheaval, but that the only possible way to accomplish this end is that of systematic, organized construction. Whether it will ever be possible to achieve this or not is of little interest here.

Conditions in Russia To-day

In order to answer the question as to what trade possibilities Russia offers, it is necessary to draw a picture of the present condition of the government in Russia, both as to its capacity for and its need of foreign raw materials and finished products, and as to the goods placed by it for disposal on the world market. The chief characteristic of the Russian government which we note in this survey is a well-guided plan as regards the relation of the state to the industry and the subsidizing of the industry to the state. It is clear that an attempt to convert the agricultural party to this plan of government could not be complete since the farming population who are to-day the owners of land are much less amenable to communistic teachings than the industrial people of the cities. Each administration must take into consideration the mentality of the Russian peasant who makes up to-day about 90% of the total population. Also the Russian government in its present day form cannot continue to exist and to build further without financial credit. For it is apparent to everyone that the countries which are based on a capitalistic type of government which are the great gold-holders, chiefly the United States and England, refuse to finance by loans a government system which aims as its last resort at the destruction of capital. On the other hand, Russia,—at least the present day government—is entirely disinclined to accept foreign financial help; for the loaners will continuously ask guarantees and assurances for their capital. This always exerts a decided influence on the debtor or the debtor state.

Russian Economic Attitude

As a basis of its economic system, Russia is determined to give out only as much gold as it takes from other places and to try to equalize necessary excess expenditures by greater income. This means that to carry on the Russian foreign trade, the imports and exports must be completely balanced so that trade credit will be given. An absolutely passive trade balance is an impossibility for the present government.

One should also keep before his eyes, if he wants to test how far the imports to Russia are to rise, that in the future the limit of value of Russian exports is of interest to the trade credit. To find out whether a certain goods can be brought into Russia with profit, he must ask himself the question, if it has to do with a raw material, an intermediate or a finished product, which serves only for consumption, or if it has to do with a material which is necessary for increasing the production of Russian specialties. In the latter case the prospect of importing these materials to Russia is naturally greater than in the former. The Russian government is concerned with the drawing up of import and export data in order to show which goods and products are necessary for increasing the productivity of the country, and which are ordered simply for consumption. By a trade monopoly of the government it is possible to cut off the import of undesirable goods or to raise the import of those products which are desired for the building up of the economic system.

From the fact that the Russian foreign trade is not conducted according to the laws of a free state but is carried out along certain definite lines, it is easy to explain that the materials under consideration in the Russian import and export statistics show such decided changes in the different economic years—a variation which would never occur under a free government. In testing the export possibilities to

*Translated from CHEMIKER-ZEITUNG, Germany.

Russia, the real need for a particular goods should be considered to a very slight extent. One should never allow himself to be deceived by the idea that there is a decided need of many materials in the country, for the plan of the Russian government is to fill these needs as far as possible and to turn appropriate industries to working up of the raw materials found in the country. This principle is completely in accord with the political view existing in Russia, for without question the aim of the communistic parties has been to convert the excess peasants to workers in the industries. At the end of its ten years management the Russian government shows with pride that the working capacity of the Russian industry has exceeded that of 1913 by about 23%. Here it should be noted that the Russian industry in 1913 was insufficient by far to care for the national market for finished goods. Also to-day and even for the next few years Russian industry may not be in a position, even with very decided development, to care entirely for the Russian market. The working together to build up the Russian industry to a definite position should be a lesson to German chemists. The development of the Russian industry will be accomplished in two ways: (1) by supplying raw materials and intermediates for refining, and machines and apparatus; (2) by the erection of manufacturing plants in Russia itself.

Seeks Credit to Build

For the erection of manufacturing plants the Russian government has sought to obtain foreign capital by granting so-called concessions. As to the success or failure of these concessions little can be said, for one must keep in mind that the present development of the Russian government was begun on the wreck of the pre-war government in 1922. Entirely new law standards had to be created for the economically changed conditions and they have not been able to complete in so short a time suitable basic laws such as we have in capitalistic countries. The fact is apparent that the law forms are not in condition so that the principles for an economic management of the state must be formed according to the demands of the managing government. Each concessionaire must ask himself the question, is it possible to adapt myself to the further development of things from the Russian standpoint and may I, with regard to these circumstances, get something profitable from it in a perceivable time ? One cannot go into such concession plans with unarrested optimism and shift the blame to lack of insight or of good-will on the part of the Russian government, but one must always keep in sight the fact that the chief aim of the Russian economic guidance will always be, by what means, and in what way is the Russian management improved and stabilized even by changing and altering previous principles. The calculation of the finished product plays a great part in the efficiency of the concession. Also the economic plan places limits on the concessionaire as to his product. When the official interference in the economic life is not arbitrary but is the result of recognized economic plans such precautions are unusual in normal times in the free management of capitalistic countries. Naturally one of the guiding thoughts of the Russian price policy is to raise the purchasing power of the population and with it their social status by limiting the economic undertaking at the cost of real profit. The cessionnaire may not disregard the state management since these trades are taxable. Technical movements play a great part in the price policy of the Russian regime.

Its Chemical Raw Materials

For the chemical industry the concessions for the erection of plants for the development of raw materials should be of especial interest. Russia is a particularly fortunate land in that raw materials may be obtained or grown in sufficient quantity for its own use. Aside from the distances which have to be overcome, and the difficulties depicted in the organization of private capitalistic plants and undertakings to obtain the raw material, everything combines toward an efficient development of raw materials in Russia. The map of Russia shows that the railways and waterways have not been sufficiently developed. Because the transport question plays an important role for obtaining and developing Russian raw materials and because it is often impossible to obtain the raw materials in the country and transport them to the needed places, one finds among the imports of Russia, raw materials whose existence in Russia is generally known.

A group of research institutions under the guidance of known savants has been formed for the study of the question as to what raw materials may be obtained and developed rationally to-day. They are the "Chemisches Institut", "Staatliches Institut der angewandten Chemie," "Institut der reinen chemischen Reaktive."

Progress Will Be Slow

Obtaining Russian raw materials is practically dependent on how far Russia is in position to buy the necessary machines and equipment from foreign countries for building up its key industries, especially for manufacturing in Russia itself. So long as the Russian economic plan exists, the barriers are drawn up on everything including superfluous amounts. In other words, the building of the Russian key industries will only be accomplished slowly and steadily.

A circumstance which may be a deciding factor is the introduction of a seven hour day into Russia. It is intended to divide the working day into three parts, and to allow the plants to run continuously.

In considering what need the present day Russian government has for products of the chemical industry and what specialties are existing in the chemical industry that Russia has for disposal to the world market, it should be emphasized that the figure given here, which are taken as the official Russian foreign

trade statistics, must always be valued according to the Russian management.

Total Chemical Import by U. S. S. R.

	1920 *Tons*	*1921* *Tons*	*1922* *Tons*	*1923* *Tons*
Sulfur and sulfur flowers	19	491	1,654	4,242
Saltpetre	.....	.....	5,667	18,182
Different chemical products	616	3,813	8,521	7,389
Ethers and essential oils	.....	.....	.....	7
Plant oils	16	789	4,308	4,193
Tanning materials	1,099	2,753	9,992	26,585
Dyes	84	331	1,375	5,258
Fertilizers	.....	1,640	3,751	81

	1923-24 *Tons*	*1924-25* *Tons*	*1925-26* *Tons*	*1926-27* *Tons*
Sulfur and sulfur flowers	7,240	9,234	8,893	8,363
Saltpetre	22,506	8,077	10,957	14,357
Different chemical products	7,957	17,098	31,120	.....
Ethers and essential oils	85	.....	187	12
Plant oils	2,538	2,234	1,475	837
Tanning materials	29,616	56,649	68,168	54,278
Dyes	5,762	7,355	5,987	2,848
Fertilizers	1,769	6,616	31,820	1,066

Total Chemical Export by U. S. S. R.

	1920 *Tons*	*1921* *Tons*	*1922* *Tons*	*1923* *Tons*
Naphtha products	86	7,394	65,555	88,709
Crude naphthalene	.....	3	5,602	31,791
Benzine, ligroin and gasolene	44	6,488	49,011	51,013
Light oils (petroleum)	41	487	1,982	3,337
Heavy oils	1	416	8,976	2,494
Naphtha residues, gas, oil & peat	.....	.....	.....	74
Pitch and tar	.....	6,153	.....	.....
Turpentine	.....	242	5,569	4,035
Soda	.....	.....	524	768
Potash	156	1,056	.....	1,545
Other chemical products	.....	6	2,441	3,346

	1923-24 *Tons*	*1924-25* *Tons*	*1925-26* *Tons*	*1926-27* *(9 months)* *Tons*
Naphtha products	709,865	1,372,362	1,473,354	1,439,744
Crude naphthalene	74,441	63,472	116,759	76,392
Benzine, ligroin and gasolene	134,048	272,905	371,837	492,244
Light oils (petroleum)	335,245	453,897	439,349	352,630
Heavy oils	90,045	100,300	124,814	128,038
Naphtha residues, gas, oil & peat	36,740	399,893	359,272	390,447
Pitch and tar	8,215	9,512	5,308	2,685
Turpentine	826	1,172	318	157
Soda	3,304	10,996	4,891	5,260
Potash	48	740	301	.....
Other chemical products	2,644	2,143	360	3,281

Chemicals Imported from Germany by U. S. S. R.

	1924-25 *Tons*	*1925-26* *Tons*	*1926-27* *Oct.-Feb.* *Tons*
Fertilizers	131	10,624	.....
Sulfur and sulfur flowers	1,110	84	550
Saltpetre	4,653	8,171	8,810
Tanning materials	138	62	250
Dyes and dyestuffs	9,340	6,632	739
Chemical products	8,259	20,470	4,389

Chemicals Exported by U. S. S. R. to Germany

	1924-25 *Tons*	*1925-26* *Tons*	*1926-27* *Oct.-Feb.* *Tons*
Crude naphtha	558	32,023	7,522
Light petroleum	47,123	59,402	38,000
Light oils	76,189	69,648	3,700
Heavy oils	22,509	46,055	33,680
Fuels	36,407	6,193	8,530
Pitch and tar	3,362	2,829	76
Turpentine and pine oil	471	115	62
Potash	.....	300	.....
Other chemical products	2,997	12	33

From these figures it is apparent that the import of chemical products is steadily rising; the rise is especially noticeable since the close of the economic year 1923-24. Among special articles, the import of dyes has increased greatly. The greatest part of the dyestuffs is imported from Germany according to the trade agreement of the U. S. S. R. in Berlin. The Russian government has, in order to work the textile raw materials in its own country into a finished product, built up in Russia a textile industry in the years 1923-26, so that it is by far superior in capacity to the present day Polish textile industry, which before the war cared for Russia. Among the chemical products, saltpetre, besides potassium salts, plays a great role in the imports from Germany to Russia. The imports of the latter will probably not show any decided increase since a potassium plant has been erected by the government at Perm. Also here the Russian government has interested itself in studying in the most fundamental way in the Laboratorium des Chemietrustes des Nordens the question of the better possibilities of using the increased potassium salts. Also they plan to erect a superphosphate plant in Ukrania.

Pharmaceuticals Are Important

Naturally the import of pharmaceutical specialties reaches an important figure but here also the research institution of the government seeks to determine what preparations brought in from foreign countries are to-day prepared in Russia. The Institut der Reinen Chemischen determined according to a Russian publication in 1926-27 that 177 of these preparations were manufactured in Russia. Naturally these were stricken from the import list.

In spite of the abundant supply of wood in Russia, turpentine and colophonium were produced in very small quantities but were largely imported from France and United States. Since 1922 they have endeavored to organize this industry. Early in 1927 the first plant at Nowgorod was put into action. Also the building up of the Russian industry for tanning materials is in progress. They will produce here the previously imported quantity of 60-70,000 tons.

The imports of rubber, guttapersha, and especially crude rubber reached in the fiscal year 1925-26 4,894,000 tons at a value of 8,408,000 rubels. This rose in the first nine months of the year 1926-27 close to 7,264,000 tons at a value of 26,236,000 rubels. As the demand of the Russian chemical industry for rubber and crude rubber imports increases, the import of finished products from gums falls. Here also the usual procedure of the Russian government shows up in importing raw materials not found in Russia, and to produce the finished product in the Russian plants by Russian workers.

Naphtha a Leading Export

The chief export of Russia so far it is of interest to the chemical industry is naphtha. Russian petroleum is to-day a decided competitor of the American, Dutch and English.

Decided demand can keep the export of a country to Russia in a state for absorbing the Russian market so that financial assistance will be given to Russia by the governments of the countries exporting the goods by securing credit on these. Three hundred million credit has been placed at the disposal of the German industry for Russian exports. A similar assistance has been rendered by the City of Vienna for the

industries settled there, to regulate the export to Russia. In all it should not be forgotten that the Russian government often conducts its foreign trade monopoly according to political and not economic methods. In considering the development of the Russian economic system through the acquiring of concessions, one must place his calculations of results far in the future and it must be clear that things to-day in Russia are in a changing state and that one should never reckon on such stability as is found in capitalistic states. An importer to Russia should be in the position to adapt himself to the development of affairs in any direction according to the needs of the acquired concessions; otherwise disappointments may not be avoided under the conditions. In any case it is remunerative for the chemical industry, as for all other industrial efforts, to follow the Russian market in its export possibilities and to care for the Russian business with consideration of its peculiarities.

Rio Tinto Has Good Year

Despite the low price of copper and the competition to which the company is subjected in its sulfur-selling business, Rio Tinto Co., Ltd., the English company operating in Spain the largest copper mine in Europe, earned £1,016,840 (approximately $5,000,000) last year. This was for shareholders. It actually earned a further almost exactly equal amount which it was obliged to pay the tax collectors of the 22 countries to which its activities have been extended, according to the "Wall St. Journal."

Rio Tinto has an enormous deposit of iron pyrites which contains low values in copper. It long ago developed a process by which it recovers the copper by a slow method of leaching. The pyrite thus cleaned of its copper is sold to makers of sulfuric acid the world over. In recent years the acid makers have, in extracting the sulfur, developed the ability to convert the residue into an iron sinter which, due to its being phosphorus free, is in excellent demand at profitable prices.

Though the competition of sulfur from Texas has cut deeply into Rio Tinto's profits on the sale of pyrite, it has come at a time when the world's consumption of sulphur is increasing enormously Taking advantage of this, Rio Tinto has improved its methods and extended its field of activities. It has erected at Wilmington, Delaware, a plant for the extraction of copper from pyrite, the largest of its kind in the world, and is making there copper bars and sintered iron ore of high quality. It has also secured large holdings in Davison Chemical Co.

It has effected the combination of nearly all the pyrite producers of Europe by forming the European Pyrites Corp. By guaranteeing that company's bonds and buying all of its shares it has become the center of an organization controlling the annual distribution of over 3,250,000 tons of pyrite ores. It is following this ore into metallurgical and chemical processes. Though still primarily engaged in mining copper in Spain, the big end of its business is sulfur, for the supply of which it has on its books hundreds of contracts.

Rio Tinto management does not expect price of sulfur will advance, though it evidently expects improvement in price of copper. Its shares have advanced within a few weeks from £43 to £48 in London. Though profits last year were not sufficient to cover the 50% dividend on its shares of £5 each, they are selling at prices to yield just over 5%. Company does not divulge the amount of its copper production.

Science and Sales

Diammonium phosphate has been produced in stable form and of a consistency suitable for use as a fertilizer by B. J. Colbjoreesen, a Swedish engineer. In his patented method, he treats concentrated phosphoric acid with ammonia at 90-100°, forming the diammonium phosphate and some triphosphate. The salt obtained is then dried at a temperature high enough to convert the tri into diphosphate, and the expelled ammonia recovered by absorption in phosphoric acid in a reaction tower.

Pure rubber may be obtained from old preserved latex by means of alkali. The rubber obtained is described as "translucent, not sticky, free of nitrogen, contained 0.007 per cent. of ash and cured normally.—*India Rubber World.*

A waterproofing method of treating a fibrous material with a solution of cinchona alkaloid or its salts or derivatives, has recently been patented by L. E. Jackson and H. E. Wassell.—*Dyer & Calico Printer.*

Aromatic acid anhydrides may be manufactured by an improved process by using one and one half molecular proportions of water to one (for benzoic anhydride) of benzotrichloride, in the presence of a catalyst.—*British patent.*

Viscose is now on the market with a two-denier filament, only half a denier thicker than the filament in the thread of natural silk, according to T. Brough, chief designer for Courtaulds.

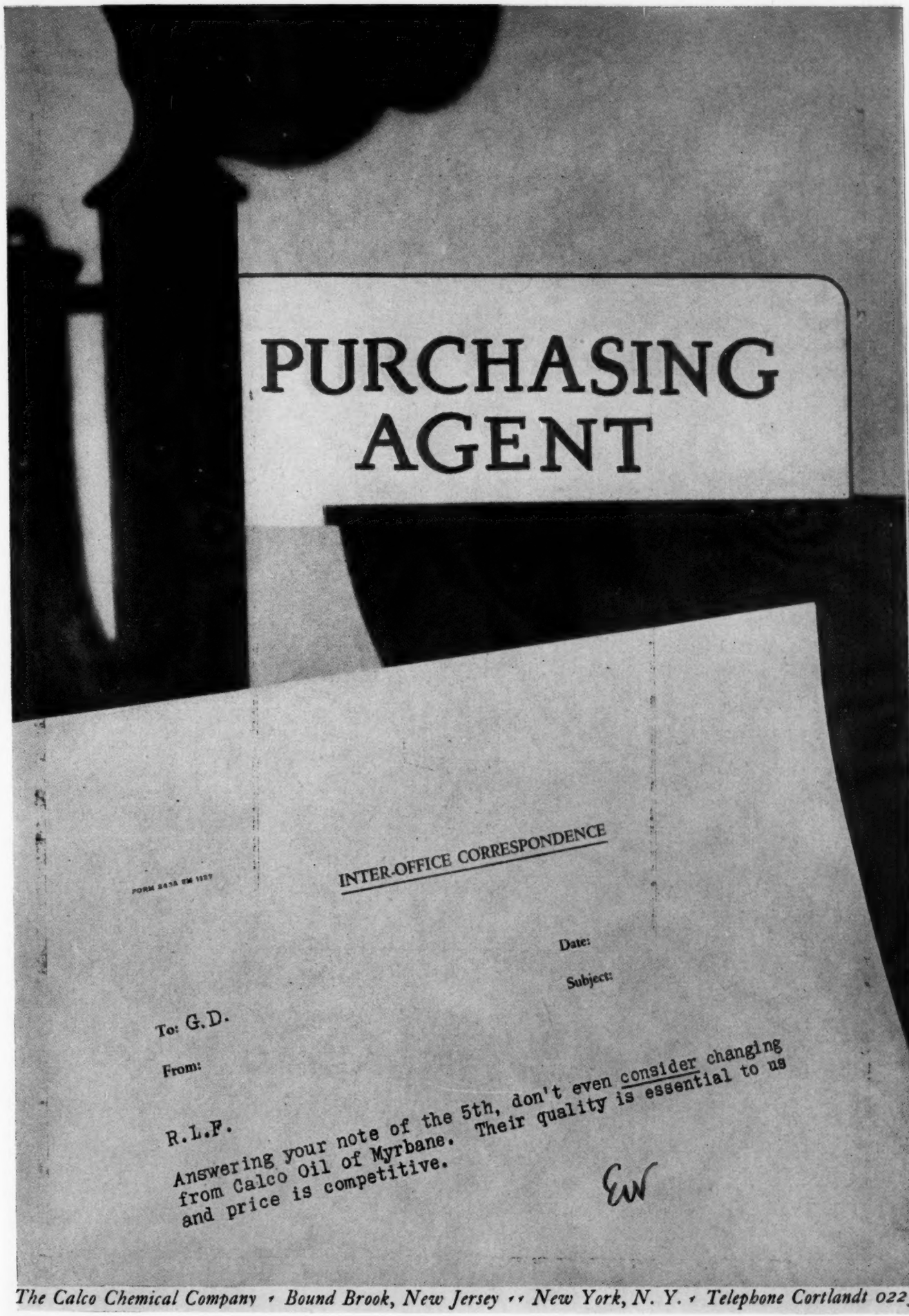
Artificial rosin has been made from the oxidation products of paraffin by the I. G. It is said to be suitable for the manufacture of varnish.—*Naval Stores Review.*

Glyptal, from phthalic anhydride and glycerin, shows electric and mechanical properties similar to Bakeliete but having several advantages over the latter.—*L'Ind. Chem.*

Tobacco may now be protected from mold and insect life while in storage by the use of a chemical solution perfected by a Netherland tobacco merchant. —*Dep't. of Comm. Bull.*

Chloramine T (sodium p-toluene sulfochloranide) can be used as a titrating agent for analytical work in the oxidizing operations where iodine has been used.—*Chem. & Ind.*

Chlorine or hypochlorous acid on wool produce a product which is unshrinkable.—*Textile World.*



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Chemical Facts and Figures

Announcement of $360,000 in Gifts Features Chemical Society Meeting

Chemical Foundation Gives $250,000—Whitmore Elected Society Director—Parr and Mayo Address General Meeting—Society to Sponsor Chemistry Prize Essay Contest—Fall Meeting at Swampscott, Mass.

American Chemical Society at its seventy-fifth meeting in St. Louis, April 16-19, announces gifts aggregating $360,000 for "co-operative service in recording and indexing through the society's publications the chemical literature of the world."

The Chemical Foundation, Inc., New York, of which Francis P. Garvan is president, gave $250,000, the largest single contribution ever received by the society. The remaining $110,000 came from the industries, among which a leading donor was the Allied Chemical & Dye Corp. of which Dr. William H. Nichols, New York, a charter member and a past president of the society, is chairman of the board.

The society, President Samuel W. Parr explained, seeks to secure $50,000 a year for five years from industry for the expansion and betterment of the co-operative service, and in addition to raise an endowment fund of $2,000,000 to place this expansion on a permanent basis.

Mr. and Mrs. Garvan, it was also announced, contributed $37,200 to be awarded by the society to the winners in the six annual prize essay contests in chemistry for 1928-29. The contest is open to students in schools, colleges, normal schools and teachers' colleges.

It will be directed by a committee of which Dr. Harrison E. Howe, Washington, is chairman. Other members are Dr. Charles H. Herty and Paul Smith, New York and Prof. Wilder D. Bancroft, Cornell University.

Election of Prof. Frank C. Whitmore, Northwestern University as a director of the society was announced.

Walter A. Schmidt, Los Angeles, was elected a member of the executive committee and Prof. Joel H. Hildebrand, University of California, was chosen councillor at large.

Prof. Neil E. Gordon, University of Maryland was named editor of the Journal of Chemical Education. The following associate editors were designated: Prof. William McPherson, Ohio State University; Prof. H. C. Sherman, Columbia University; Robert E. Rose, director technical laboratory, E. I. du Pont de Nemours, Inc., Wilmington, Del.; William Segerbloom, Phillips Exeter Academy; Prof. Ross A. Baker, Syracuse University.

The society will hold its fall meeting this year at Swampscott, Mass., The spring meeting of 1929 is scheduled for Columbus, Ohio, and the fall meeting of that year for Minneapolis. The spring meeting of 1930 will convene in Atlanta.

The meeting was largely given over to divisional meetings. There were, however, two general meetings, one on the evening of April 17 and one the following evening. At the first general meeting, Dr. Parr spoke on "Some Combustion Problems in Their Relation to Public Health"; and Dr. William J. Mayo, Rochester, Minn., on "The Advancement of Learning in Medicine Through Bio-chemistry." At the second general meeting, Charles Allen Thomas and Carroll A. Hochwalt spoke on "The Effect of Alkali Metal Compounds on Combustion." In a radio address broadcast April 17, Prof. F. C. Whitmore, Northwestern University, spoke on "Petroleum from Coal."

Among the papers read at various divisional meetings were: "Accelerated Tests of Organic Protective Coatings," by Percy H. Walker and E. F. Hickson, Bureau of Standards; "Finishes for Metal and Wood Surfaces," by F. W. Hopkins, Murphy Varnish Co.; "Nitrocellulose Lacquers", by H. E. Hoffman and E. W. Reid, Mellon Institute; "Color Determination," by O. L. Evenson and D. T. McCutcheon; "Orthodichlorbenzene Constants," by T. S. Carswell; "Quinizarin Making," by Max Phillips; "Anthracene Making," by Harry F. Lewis; "Blue Gas Enrichment," by R. V. Kleinschmidt; "Methanol Synthesis" by D. F. Smith and B. F. Branting; "Tar Acid Separation" by S. Caplan and P. W. Dilthey; "Aresnic on Apples," by J. W. Barnes and Ralph H. Smith; "Arsenic as Insecticide" by H. W. Ambruster; "Insecticide Evaluation" by Charles H. Peet; "Soap Nicotine Deterioration" by C. C. McDonnell and J. J. T. Graham; "Petroleum in Insecticides" by E. R. de Ong; "Pyrethrum Extraction" by W. A. Gersdorff and W. S. Abbott; "Copper Carbonate Fungicides" by O. A. Nelson; "Litharge-Neutral Fat Soaps" by S. H. Diggs and S. F. Campbell; "Olefins Determination" by W. F. Faragher, J. C. Morrell and I. M. Levine; "Lubricant Separation" by E. C. Alderman; "Hydrocarbons Vapor Pressure" by Hal B. Coats and George G. Brown; "Air-Gasoline Dew-Points" by O. C. Bridgeman; "Butane Pyrolysis" by Charles D. Hurd and LeRoy U. Spence; Oil from Oil-Bearing Sands" by F. E. Bartell and F. L. Miller; "Shale Gasoline Refining" by Robert A. Baxter; "Shale Retorting Variations" by Robert A. Baxter; "Volatility and Detonation" by J. C. Geniesse and H. F. Huf; "Thiuram Ultra—Accelerators" by A. D. Cummings and H. E. Simmons; "Pigments in Rubber" by Ernst A. Grenquist; "Phenol Condensation Accelerators" by A. M. Clifford and C. E. Boord; "Carbon Black Constituents" by C. R. Johnson; and "Carbon Black in Rubber" by D. J. Beaver and T. P. Keller.

American Com'l Alcohol Corp. Formed By Merger of Three Producers

Announcement is made of the formation of American Commercial Alcohol Corp., which has acquired the assets of American Distilling Co., David Berg Industrial Alcohol Co., and S. M. Mayer Alcohol Co., Inc., with plants located, respectively, at Pekin, Ill., Philadelphia and New Orleans. According to a statement issued by the president, the corporation is one of the three largest producers of industrial alcohol in the United States. The active management, including several executives who have been identified with the predecessor companies, has acquired a substantial amount of the Preferred and over 80% of the outstanding Common Stock of the Corporation.

Philip Publicker formerly head of David Berg Industrial Alcohol Co. is chairman of the board of directors of the new corporation and Richard H. Grimm, president of American Distilling Co. prior to the consolidation, is president. New York offices have been opened at 420 Lexington Avenue.

"Grasselli Hour" featuring the Grasselli Gardners and Grasselli Horticulturist an orchestra and soloist respectively is the latest entry to the lists of chemical and drug concerns using the radio as a means of advertising. "Grasselli Hour" is a regular feature of station WTAM Cleveland each Wednesday at 7 p. m.

Association of Producers and Refiners of Methanol hold a closed meeting at Hotel Statler, Buffalo, May 2, to discuss affairs of the industry.

Weiss Diphenylguanidine Patent Invalidated By U. S. Supreme Court

Six claims of the Weiss patent (U. S. 1411231), covering the use of disubstituted guanidines as accelerators of the vulcanization of rubber, were declared invalid by the Supreme Court of the United States in a decision given April 9 in the case of Corona Cord Tire Co., petitioner, vs. Dovan Chemical Corp. This decision reverses that of the Circuit Court of Appeals which, in turn, had reversed the District Court's dismissal of the infringement suit of the Dovan Corp.

This is a bill by the Dovan Chemical Corporation against the Corona Cord Tire Company to enjoin infringement of a patent issued to Morris L. Weiss, assignor of the Dovan Chemical Corp. The District Court for the Western District of Pennsylvania dismissed the bill for lack of validity of the patent. 10 Fed. (2d) 598. The dismissal was reversed and the patent and the infringement charged were both sustained by the Circuit Court of Appeals for the Third Circuit. 16. Fed. (2d) 419. A writ of certiorari was granted April 11, 1927 (273 U. S. 692), because in the prior case of Dovan Chemical Corp. v. National Aniline & Chemical Co. 292 Fed. 555, the Second Circuit Court of Appeals had reversed the decree of the District Court for the Southern District of New York (not reported) in favor of the Dovan Corporation and had held that the patent was invalid on the ground that Weiss was not the first discoverer.

In its decision, the Supreme Court held that claims 4, 8 and 12 of the Weiss patent were invalid as it had been shown that the first discovery that diphenylguanidine was a useful accelerator of the vulcanization of rubber was made public by Dr. George Kratz, in a paper read September, 1919, at a meeting of the American Chemical Society.

Claims 1, 5, and 9 claiming the process of treating rubber by compounding with the rubber compound "a disubstituted guanidine," were held invalid under the doctrine of the Incandescent Lamp Patent, 159 U. S. 465, it being shown by experts that a number of such compounds are not accelerators at all and that there is no general quality common to disubstituted guanidines which make them all effective as accelerators.

Annual Salesmen's Outing May 15

The forthcoming annual "Frolic and Brawl Game" of the Salesmen's Association of the American Chemical Industry which will be held this year at Narragansett Inn, Lindenhurst, Long Island, on Tuesday, May 15 at 11 A. M., promises to be a merry and well attended party.

The committee in charge, Ira P. MacNair, MacNair-Dorland Co., Victor Williams, Monsanto Chemical Works and F. P. Summers, Noil Chemical & Color Works, has outdone itself in arranging for this year's festivities. The annual baseball game will of course feature the "athletic" section of the program which also offers the annual quoits pitching contest, golf for those who care to play and various other types of games. The Association is "digging down" more handsomely then ever in its outlay for prizes and the committee gives assurance that any one of the prizes are well worth breaking a leg for.

To top off the day a shore dinner and all that goes with it will be served at the Inn at 6.30 P. M. That ends the scheduled events for the day with a continuation of the party contingent on individual discretion.

No special arrangements have been made for transportation. Lindenhurst is on the Long Island Railroad and about one hour from New York and Brooklyn by motor.

Chicago section, American Chemical Society, meets at the City Club, April 27. Prof. James B. Conant spoke on "Recent Triumphs and Future Problems of the Organic Chemist"; W. J. McGill on "The Story of Lubricating Oil"; and Emanuel Lowenherz on "Success in the Application of Chemistry to Industry."

Further Institute of Chemistry Plans

Institute of Chemistry, American Chemical Society, announces further plans for its second annual session at Northwestern University, Evanston, Ill., July 23 to August 18.

Twenty-eight conferences, describing major fields of chemistry, will feature the 1928 work of the Institute, which, it is stated, will function as an international clearing house of knowledge in chemical science, and attract hundreds of chemists. Fifty other topics will be dealt with in round tables.

Prof. F. C. Whitmore, chairman of the Division of Chemistry and Chemical Technology of the National Research Council, was named Director of the Institute for one year. He is the head of the Department of Chemistry at Northwestern. Prof. Whitmore will also be one of the group of American lecturers of the Institute, his subject being "Modern Organic Chemistry."

Prof. Arthur I. Kendall of the Washington University School of Medicine at St. Louis, has been named lecturer on "The Chemistry of Bacteria." Other faculty appointments include: Prof. Victor K. La Mer, Columbia University, "Modern Physical Chemistry"; Prof. Harry N. Holmes, head of the Department of Chemistry of Oberlin College, "Colloids"; Prof. B. S. Hopkins, University of Illinois, "Modern Inorganic Chemistry"; Prof. W. T. Read, Texas Technological College, and formerly of Yale, "Modern Industrial Chemistry"; Dr. G. L. Wendt, dean of chemistry and physics at Pennsylvania State College, "Industrial Research."

During the week of July 23 seven conferences will be held on the general problem of developing new markets other than food for agricultural products by means of chemistry. A second group of seven conferences during the week of July 30 will take up fertilizer, catalysis, hydrogenation, organic chemistry, antioxidants, and the utilization of energy of high intensity in producing chemical reactions.

Health, the use of physics and chemistry in studying life processes, chemical hazards, petroleum, resins, lacquers and paints will be taken up at seven conferences in the week of August 6. Sanitation, the packing industry, leather, chemical literature, ceramics, alloys, and chemistry and the other sciences in national defense will be discussed at seven conferences in the concluding week of August 13.

Among the foreign scientists who will participate in the Institute is Sir James Colquhoun Irvine, principal and vice-chancellor of the University of St. Andrews, Scotland.

American Potash Co., Dallas, Texas, is chartered with capital of 10,000,000 shares of no-par stock, to engage in the mining and refining of potash. The company has acquired land in Midland county, Texas, where test wells have been drilled, proving existence of thick beds of salts of more than 15 per cent. potash at workable depths. Company plans construction of plant for developing the property. Incorporators are A. L. Carter, Houston; J. N. Stier, J. B. Adoue, Jr., H. R. Mitchell, Wirt Davis, M. Agress, T. G. Leachman, J. L. Lancaster, F. F. Florence, L. M. Bourne, George D. Wateson and Hugo Schoellkopf, all of Dallas.

Maltbie Chemical Co., Newark, contributes a grant for a research fellowship for the coming year to the Department of Chemistry, Princeton University. Research work to be done under this fellowship will cover certain phases of the chemistry for creosote and creosote compounds.

J. T. Baker Chemical Co., Phillipsburg, N. J., purchases the Dissosway Chemical Co., Brooklyn. Manufacturing operations of the Dissosway company have been transferred to Phillipsburg and continued under the direction of the Baker organization.

Wishnick-Tumpeer, Inc., opens Boston office at 141 Milk St. Branch is in charge of Bert E. Dougherty, formerly purchasing agent, Republic Rubber Co.

Dr. Edgar Fahs Smith Dies

Dr. Edgar Fahs Smith, provost of the University of Pennsylvania from 1911 to 1920, professor emeritus of chemistry of that university, chemist of international repute, and one of America's leading educators, dies of pneumonia, May 3, in the university hospital at Philadelphia. He would have been 72 years old on May 23.

Born at York, Pa., Dr. Smith prepared for college at the York County Academy, where he subsequently was an instructor. In 1872 he entered the junior class of Pennsylvania College, Gettysburg, Pa., and received the degree of Bachelor of Science in 1874.

Dr. Edgar Fahs Smith

Dr. Smith then went to Germany, where he entered the University of Goettingen, specializing in chemistry. Returning to the United States in 1876, he became an assistant in analytical chemistry to Professor F. A. Genthe, Towne, Scientific School University of Pennyslvania.

In 1881 he was called to Muhlenberg College, and then to Wittenberg College. In 1888 he returned to the University of Pennsylvania to take the chair of analytical chemistry. Four years later he was named head of the Department of Chemistry, and in 1898 became Vice Provost. He was named thirteenth Provost of the university in 1911, following the resignation of Dr. Charles Custis Harrison, and continued in that capacity until 1920, when he resigned both as Provost and Blanchard Professor of Chemistry. He was then elected Emeritus Professor of Chemistry.

Included among the universities and colleges which bestowed honorary degrees upon Dr. Smith are: Pennsylvania, Wisconsin, Franklin and Marshall, Pittsburgh, North Carolina, Princeton, Wittenberg, Allegheny, Temple, Muhlenberg, University of Dublin, Yale, Swarthmore and Queens College, Canada.

Although continually engaged in research work and writing, Dr. Smith found time to serve the interests of the public. He was a member of the jury of award at the Chicago Exposition in 1893, a member of the United States Assay Commission in 1895 and from 1901 to 1905 adviser in chemistry to Carnegie Institute and a trustee of the Carnegie Foundation from 1914 to 1920. He also had been President of Wistar Institute, a member of the Electoral College of Pennsylvania, a research associate to Carnegie Institute, and was a member of the Board of Technical Advisors, Washington Disarmament Conference.

Dr. Smith also was a member of the National Academy of Sciences, president, American Philosophical Society from 1902 to 1906, president, American Chemical Society in 1898, 1921 and 1922; vice president American Association for the Advancement of Science in 1898; member of the Society of the Chemical Industry, and of the Philadelphia School of Pharmacy and Science; an honorary member of the American Electrochemical Society, the Societe de Chimie Industrielle in France, and the Chemical, Mining and Metallurgy Society of South Africa, and a member of the University and Union League Clubs in Philadelphia and the Chemists' Club in New York City.

In 1914 Dr. Smith received the Elliott Cresson Medal awarded by the Franklin Institute and in 1922 he was the recipient of the Chandler Medal awarded by Columbia University. He was made an officer of the Legion of Honor by France in 1923 and in 1926 he received the Priestley Medal from the American Chemical Society.

John T. Alexander, for past twenty-one years, Canadian representative, Valentine Varnish Co., New York, dies in Toronto, aged 62.

Personal and Personnel

Professor Frank C. Whitmore, director, Institute of Chemistry, American Chemical Society, predicts that civilization is about to discard its leaders of the "legal or salesman type" and to substitute in industrial production chemically trained men, in an address delivered before a dinner meeting of teachers and students of chemistry held April 13, under the auspices of the Indianapolis section, American Chemical Society.

Edward R. Armstrong, consulting engineer, E. I. du Pont de Nemours & Co., announces plans to establish a series of anchored airdromes across the Atlantic Ocean, making possible 36-hour plane service between the United States and Europe. According to reports, a syndicate is being organized, and will provide funds to build the first sea stations about 400 miles due East of the Delaware Capes.

Dr. Charles H. Viol, secretary, Standard Chemical Co., Pittsburgh, and director of its radium research laboratory, dies in Memorial Hospital, New York, April 6, aged 42. He was an expert in the radium field and a holder of several patents dealing with radium production and applications.

John A. Chew, Warner Chemical Co., and Ralph E. Dorland, Dow Chemical Co., are appointed members of reception committee, for dinner to be held by Drug & Chemical Section, New York Board of Trade and Transportation, on May 15 at the Waldorf-Astoria, New York.

M. J. Rentschler, general manager, J. H. R. Products Co., Willoughby, Ohio, addresses St. Louis section, American Chemical Society, May 7, on the subject of "Peroxides: Their Manufacture, Properties and Uses."

C. Wilbur Miller, president, Davison Chemical Co. and the Silica Gel Corp., both of Curtis Bay, Md., returns from Europe where he is said to have undertaken to promote distribution of silica gel.

Dr. Harold Hibbert, professor of industrial and cellulose chemistry, McGill University, leaves for Europe where he plans to interview outstanding chemists in the cellulose and industrial fields.

J. W. Block, organizer in 1902 of the Superior Chemical Co., Joliet, Ill., establishes the Blockson Chemical Co., capitalized at $300,000, in that city to engage in manufacture of chemicals.

Walter J. Johnson, of Shearson, Hammill & Co., is elected to board of directors, U. S. Industrial Alcohol Co., to succeed Harry A. Arthur, vice-president, American International Corp.

Dr. Harry Everett Barnard, until recently president, American Institute of Baking, becomes technical consultant, Royal Baking Powder Co., with headquarters in Indianapolis.

Frederic P. Robert, formerly New York manager, Van Schaack Bros. Chemical Works, becomes general manager of the new Miner-Edgar Chemical Corp.

Edward Mallinckrodt, Mallinckrodt Chemical Works, is elected to board of directors, Washington University, to succeed his father, recently deceased.

A. L. Marshall, formerly with E. I. du Pont de Nemours & Co. of New England, is elected vice-president, Welch Paint & Glass Co., Springfield, Mass.

News of the Companies

United Color & Pigment Co., Newark, N. J., purchases plant and business of Morris Herrmann & Co., New York. Herrmann plant at Newark will be dismantled and all manufacturing operations concentrated in the United factory, while the Herrmann sales organization will be taken over by the United.

Joseph J. Mangin continues as head of the merger and Edwin Blum, president, Morris Herrmann & Co., retires from the business.

Monsanto Chemical Works, St. Louis, gives dinner, April 12, to the thirty-eight Saftey First team captains who broke all previous safety records at Monsanto. Not a single lost time accident has occurred in the acid and intermediate plant of the company since the first of the year.

American Creosoting Works, Inc., Norfolk, Va., plans to re-erect a plant in that city for distilling creosote from coal. Estimated cost is $150,000 and initial capacity 4,000,000 gallons a year, which will be increased, according to present plans, to 10,000,000 gallons per year.

Stauffer Chemical Co. acquires 226 acre plant site near du Pont Rayon Corp. plant, now under construction two miles southeast of Richmond, and a 40 acre site near the Viscose plant at Roanoke, Va.

Du Pont Rayon Co. leases twenty-second floor of 2 Park Ave. building, New York, in which building, with the Du Pont Cellophane Co., it occupies three-quarters of the twenty-third floor.

Devoe & Raynolds Co. completes negotiations for purchase of paint, varnish and lacquer business of Peaselee, Gaulbert Co., Louisville, Ky., effective April 28.

E. I. du Pont de Nemours & Co. completes construction of unit at Mineral Springs, Ala., to manufacture nitric acid by oxidation of ammonia.

E. I. du Pont de Nemours & Co. produces new "mill white," a finish for interiors of mills and factories, to which name "Du-Lite" has been given.

Celotex Co. opens two new European offices in Hamburg and Antwerp and appoints 18 new distributors to handle its increased foreign business.

Linde Air Products Co., a unit of Union Carbide and Carbon Corp., New York, plans erection of $1,000,000 plant at Charleston, Va.

Proctor & Gamble Co. plans erection of new soap manufacturing plant at Baltimore to cost between $3,000,000 and $4,000,000.

Dyestuffs department, E. I. du Pont de Nemours & Co. announces new direct orange, Pontamine Light Orange 2 G.

John A. Casey Co., naval stores, Brooklyn warehouse is destroyed by fire with estimated loss of $100,000.

Wessel, Duval & Co., New York importers of sodium nitrate, move to larger offices at 1 Broadway.

Helfrich Laboratories, Chicago, moves to new quarters at 546 West Monroe St., that city.

National Aniline & Chemical Co. announces new dye, National Alizarine Blue Black BG.

Supreme Court Barium Dioxide Ruling

United States Supreme Court holds that the flexible tariff provisions of the tariff act of 1922 are constitutional, in case of J. W. Hampton, Jr., & Co. against the United States, involving the importation of barium dioxide.

Before a shipment of this company had arrived at the United States port, the President increased the duty on barium dioxide from 4 cents to 6 cents per pound, acting under the authority of section 315 of the tariff act and upon findings submitted by the United States Tariff Commission after investigation of the relative costs of domestic and foreign production.—(CHEMICAL MARKETS, May, 14, 21, 28, 1924, April 22, 1926, and June 2, 1927.)

The Hampton company held the act unconstitutional on two grounds, first because it was an illegal delegation by Congress of the legislative function of raising revenue, and second, because section 315 admittedly is to equalize production costs rather than to raise revenue. The court disagreed with both contentions.

The court held it to be proper for Congress to delegate detailed matters if the general policy is laid down by Congress, and showed how the Interstate Commerce Commission has proper authority to determine freight rates as a delegation of the power of Congress to regulate interstate commerce, since Congress has declared the policies to be followed by the commission in fixing rates.

New Acetic Acid Process Announced

Discovery of a process by which acetic acid may be produced from crude pyroligneous at one-half of present costs and without using calcium acetate has been announced at Memphis, Tenn., by W. H. Matthews, president, Forest Products Chemical Co. Mr. Matthews, a member of Secretary Hoover's committee on Wood Utilization, left here last night for Washington where he is to address that body on the recovery of the wood-chemical industry after the war.

The new process of recovering acetic acid was the result of three years continual laboratory research work by the Forest Product chemists. Under the process now in use the pyroligneous is mixed with lime in large drying beds and the acetic acid is later removed by an operation using sulfuric. Acetic, under the newly discovered process comes directly from the pyroligneous, saving the cost of lime, steam and labor.

Commissioner of Prohibition, Dr. J. M. Doran, announces following amendment to Regulation 3: Effective May 1, 1928, Specially Denatured Alcohol Formulae Nos. 2-A, 2-B, and 12-A can no longer be withdrawn for use in the manufacture of patent leather, artificial leather, leather finishes, thinners, solutions and solvents used in the leather industry and solvents of any kind except ethyl acetate and similar esters. Specially denatured Alcohol formulae Nos. 1, 23-A, and 44-A are hereby authorized for use in the manufacture of the above-mentioned products in lieu of Specially Denatured Alcohol Formulae Nos. 2-A, 2-B and 12-A.

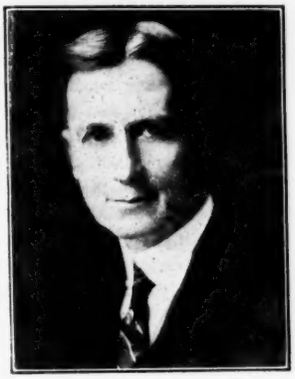
In suit of Riches, Piver & Co. against Nitrate Agencies Co., charging infringement of Patent 1237815 for a process of manufacturing calcium arsenate, Circuit Court of Appeals, Third Circuit, found the patent invalid in view of the prior art and if valid it was the opinion of the court that it was not infringed by the defendant. It was also found that claims 1 and 2 of the patent were broader than the invention.

Philipp Bros., Inc., New York, with offices in the Woolworth Building, 233 Broadway, moves to larger quarters on the thirty-fourth floor of the same building.

Joseph Turner & Co., New York, with offices at 19 Cedar St. moves to larger quarters on the eighth floor of the same building

Harkins Gets 1928 Gibbs Medal

William Draper Harkins, professor of physical chemistry, University of Chicago, is chosen as recipient of the Willard Gibbs Medal for 1928. This medal is given annually by the Chicago section of the society to the chemist who, because of his eminent work in and original contribution to pure or applied chemistry is deemed worthy of special recognition by the jury. The 1928 award will be made to Professor Harkins on May 25 at the regular meeting of the Chicago section. The 1928 jury of award consisted of A. D. Little, S. W. Parr, L. M. Tolman, E. W. Washburn, Edward Barstow, W. Lee Lewis, Wm. McPherson, Julius Stieglitz, Roger Adams, Moses Gomberg, J. A. Norris and F. C. Whitmore.



William Draper Harkins

Doctor Harkins received his A. B. from Leland Stanford in 1900 and became an assistant in the Department of Chemistry at the University of Montana. In 1901 he was made professor, and later head, of the department. In 1912 he left the University to become assistant professor at the University of Chicago, and was made professor of physical chemistry in 1917. Professor Harkins received his Ph.D. from Leland Stanford in 1907 and added to his chemical training at the Institute fur physikalische Chemie, at Karlsruhe, Germany.

Dr. Harkins has had many chemical connections in addition to those of an academic nature. He was chemist in charge of the Smelter Smoke Investigation for the Anaconda Farmer's Association, 1902-10. In 1910-12 he was connected with the U. S. Department of Justice; in 1920-22 consulting chemist, U. S. Bureau of Mines; and in 1924, consulting chemist, U. S. Air Service.

In 1916 he was chairman of the Chicago Section and more recently vice president of the American Association for the Advancement of Science, Section C. He is a member of many learned societies, and has made numerous contributions to the chemical literature. He is particularly known for his researches on isotopes and atomic structure.

Fertilizer Price "Inquiry" Proposed

A Senate inquiry into charges of fertilizer price discrimination in Tennessee will be requested if the Federal Trade Commission does not conduct an investigation into these charges, Senator McKellar (Dem.) ,Tennessee, announces on the floor of the Senate, May 2.

Declaring that "fertilizer associations" are obtaining $3 to $4 more per ton for fertilizer in Tennessee than they ask in Alabama "just across the way," Senator McKellar said that he had asked the Federal Trade Commission to investigate the reasons for this divergence in prices. When this was called to his attention, he stated, he wrote to the fertilizer associations and asked why the Tennessee prices were so much higher than those in Alabama, and the only "plausible reason" he received was that a tax of 20 cents more per ton on fertilizer is assessed in his State.

Senator McKellar declared that he also addressed a letter to the Attorney General, John G. Sargent, asking for information on the subject. The reply he received, from the Assistant to the Attorney General, William J. Donovan, he said, showed "striking resemblance" to the letter he had received from the fertilizer associations. These letters were inserted in the record.

Celotex Co., Chicago, reports that March sales broke all previous monthly records by 35 per cent., totaling more than 26,000,000 feet.

Initial Potash Permanganate Duty Hearing Held; Dr. E. H. Carus Testifies

Hearings in the cost-of-production investigation covering potassium permanganate were begun before the United States Tariff Commission, April 19.

Dr. Edward H. Carus, president, Carus Chemical Co., La Salle, Ill., and Hugh M. Frampton, Washington, D. C., testified in behalf of the applicants for increased tariff rates on the imported product. James A. Delahanty, representing D. H. Litter & Co., New York, appeared in opposition to an increase in tariff rates.

The tentative findings of the Commission (CHEMICAL MARKETS, April, 1928) were accepted by Mr. Frampton on behalf of the applicants. Dr. Carus, however, testified before the Commission to present additional information and exhibits.

Prior to the opening of the hearings, Mr. Delahanty requested the Commission to postpone the hearings for 30 days in order that more accurate information may be obtained from abroad. He criticized the data compiled by the Commission on foreign production costs, explaining that they were not comparable with the domestic costs.

In support of his argument for a postponement, he declared that the importers were protecting the American industry, and that the importers had been more involved than the applicants, who are seeking an increase of two cents a pound on imports.

He also based the objections to the Commission's tentative findings on the ground that the Commission's specialists referred to only one foreign producer when as a matter of fact there were two in Germany and one Czechoslovakia. He said he doubted foreign producers were members of the German cartel, declaring that "apparently there was a free market over there."

Mr. Frampton in a brief oral statement said that Mr. Delahanty's request was not warranted, and that the request for a postponement could best be answered by the Commission's findings, which revealed that the domestic production of potassium permanganate in 1925 and 1926 cannot be published without revealing individual operations, but it was, however, substantially in excess of imports.

After a recess, the chairman of the Commission, Thomas O. Marvin, overruled the request of Mr. Delahanty for a postponement of the hearings.

In closing the hearings, Chairman Marvin announced that both the applicants and the importers may file all final briefs between now and May 21. The Commission also invited all interested parties to file any additional data or exhibits in connection with the case.

American Leather Chemists' Association will hold twenty-fifth annual meeting at the New Ocean House, Swampscott, Mass., June 6, 7, and 8. In addition to regular meetings and discussions, the committee is planning visits to neighboring tanneries and allied industries. There will also be a complete program of social entertainment including golf, tennis, dancing, boating and sightseeing.

Northeastern Section, American Chemical Society holds meeting April 13 at the Riverbank Court Hotel, Boston. Dr. Edwin T. Wyman, instructor in pediatrics, Harvard Medical School, spoke on "Therapeutic Use of Ultra-Violet Light," and Dr. George S. Forbes, professor of chemistry, Harvard University, on "Spectral Energy Distribution and Its Measurement."

Insecticide and Disinfectant Manufacturers' Association distributes to members the February, 1928 issue of "Ripples from Edgewater Beach," official publication of the Edgewater Beach Hotel which will be the scene of the summer convention of the association on June 4, 5, and 6.

E. A. Trosell, manager, Chicago office, American Solvents & Chemical Corp., visits Kansas City and other Western points.

The Financial Markets

Finance Company Formed by Imperial Chem. Ind. and Chase Securities Corp.

Sir Alfred Mond is Chairman of Board—Wiggin of Chase Bank, American Chairman—Company Formed as Aid to Industry—Shares Not for Public Sale—No American Chemical Executives on Board of Directors.

Sir Alfred Mond, head of the Imperial Chemical Industries, announces the formation of a big combination of financial interests of England and America. A new company, to be called the Finance Company of Great Britain and America, has been formed with nominal capital of £2,040,000, divided into 2,000,000 common shares of £1 par and 800,000 deferred shares of 1s each, to be held in equal proportions by Imperial Chemical Industries Ltd., and Chase Securities Corp.

Sir Alfred Mond will be chairman of the board of directors of the new company, and Sir Harry McGowan, chairman and managing director of Nobel Industries and director of many other large industrial concerns of Great Britain and director of Midland Bank, will be the vice-chairman. In addition, the board will include Albert H. Wiggin, chairman of Chase National Bank, the Marquess of Reading, Lord Colwyn, Harold John Mitchell, Henry Mond, Clarence Graff, and James Henry Gannon.

To provide a means of co-operation between the British and American interests, the charter provides for an American committee with functions similar to those of the board of directors. Mr. Wiggin will be chairman of the American committee, and Sir Alfred Mond and Sir Harry McGowan will also be members. In addition American Committee will include Matthew C. Brush, president and chairman of American International Corp., Frederick H. Ecker, vice-president Metropolitan Life Insurance Co., Archibald R. Graustein, president International Paper Co., J. Horace Harding, of Charles D. Barney & Co., John J. Raskob, chairman of Finance Committee of General Motors Corp., Charles M. Schwab, chairman of Bethlehem Steel Corp., Alfred P. Sloan, Jr., president of General Motors Corp., William H. Woodin, president of American Car & Foundry Co., and Halstead G. Freeman, president of Chase Securities Corp.

Sir Alfred Mond, in explaining the objects of the new company, said the company does not intend going into the ordinary kind of financial operations such as government and municipal loans. "Our business," he said, "will simply be a question of helping industry and making investments here, on the Continent, in America or anywhere an opportunity offers. We might take up amalgamation of steel works or a number of other things which I have been looking into lately."

Sir Alfred emphasized the point that the shares of the company are not going to be placed on the market.

DuPont Earns $7.63 in First Quarter

Report of E. I. du Pont de Nemours & Co. for quarter ended March 31, 1928, shows consolidated net income of $21,514,198 after interest, federal taxes, etc., equivalent after debenture dividends, to $7.63 a share earned on 2,661,658 shares of no-par common stock. This compares with $15,458,268 or $5.35 a share on common stock in first quarter of 1927.

Profit and loss surplus on March 31, 1928, was $121,417,453, comparing with $93,553,672 on March 31, 1927. Earnings from operations were $4,118,891, an increase of $831,120, or 25 per cent.

Income from the company's General Motors investment was $14,974,930, compared with $11,977,865 last year. Both of these figures include the extra dividends paid by General Motors in January of the respective years.

The income from miscellaneous securities increased from $525,526 in 1927 to $3,067,529 this year. This increase includes approximately $2,286,000, representing profit from the sale of 114,000 shares of United States Steel Corporation common stock. Without this unusual source of profit the earnings for the quarter would be $6.77, or $1.41 a share over the first quarter of last year.

The surplus account was increased during the quarter by $23,632,209 from $97,785,244 at December 31, 1927, to $121,417,453 March 31 this year.

A revaluation of the company's holdings in General Motors Corporation common stock accounts for $19,962,440 of the increase in the surplus account. The value of the du Pont Co.'s investment in General Motors was adjusted on the books of the company in March, 1927, to $119,774,640, and in March, 1928, to $139,737,080, which closely corresponded to its net asset value as shown by the balance sheets of the General Motors Corporation at December 31, 1926, and December 31, 1927, respectively. On the basis of the 3,992,488 shares of $25 par value now owned, the present figure represents a valuation of $35 per share compared to the previous valuation of $30 per share.

Consolidated income account for quarter ended March 31, 1928, compares as follows:

	1928	1927	1926	1925
Op. income	$4,118,891	$3,287,771	$3,321,983	$2,881,641
Inc. G. M. invest	*14,974,930	*11,977,865	*8,984,263	1,981,159
Other income	¶ 3,067,529	525,526	†2,359,661	455,078
Total income	$22,161,350	$15,791,162	$14,665,907	$5,317,878
Fed. taxes	625,729	310,830	410,017	264,688
Interest	21,423	22,064	30,121	370,471
Net income	$21,514,198	$15,458,268	$14,225,769	$4,682,719
Deb. divs	1,209,711	1,198,988	1,176,431	1,026,242
Com. divs	16,634,718	13,307,545	9,979,645	2,376,185
Surplus	$3,669,769	$951,735	$3,069,693	$1,280,292
§Prev. surp	97,785,244	66,417,566	62,669,541	55,881,491
Reval G. M. stock	‡19,962,440	‡26,184,371	.....	.....
P & L sur	$121,417,453	$93,553,672	$65,739,234	$57,161,783

*Includes extra dividend received from General Motors Corp. investment.
†Includes approximately $2,000,000 interest received from the government on account of refund of taxes overpaid for years 1915 to 1924, inclusive.
‡Revaluation of company's holdings of General Motors Corp. common stock.
§Surplus on December 31.
¶Includes approximately $2,286,000 profit from sale of U. S. Steel common stock.

Commercial Solvents Profits Higher

Commercial Solvents Corp. reports for quarter ended March 31, 1928, net profit of $575,726 after depreciation, interest, federal taxes, etc., equivalent to $2.64 a share earned on 217,722 shares of no par stock outstanding at end of the quarter. This compares with $526,099 or $4.83 a share earned on 108,861 shares of no par Class B stock outstanding in first quarter of 1927.

Income account for quarter ended March 31, 1928, compares as follows:

	1928	1927	1926
Operating profit	$731,688	$670,637	$453,723
Other income	15,102	18,410	27,973
Total income	$746,790	$689,047	$481,696
Charges	58,617	41,810	79,194
Federal taxes, etc	112,447	121,138	80,613
Net profit	$575,726	$526,099	$321,889

Allied First Quarter Satisfactory

Although the Allied Chemical & Dye Corp. does not issue any figures other than those contained in the annual statement which appeared in March the first quarter was satisfactory, according to the "Wall St. Journal." The improvement in the fertilizer and steel trades has helped considerably, for Allied's subsidiaries supply commodities to both of these industries.

Allied Chemical common stock sold at 43¼ in 1920 when the company was formed. It has risen to 166½, the high, against a low of 146 this year. It is currently quoted around 160.

There has been no change in capitalization since the formation of the corporation. There are 2,178,109 shares of no-par common stock outstanding, out of a total authorization of 3,143,455, and $39,284,900 of 7% preferred stock outstanding, out of a total of $97,326,400 authorized. The preferred is redeemable at 120. Both classes have voting power. There is no funded debt and no bank loans are outstanding. The company for a long time has put out call loans and always has several millions out.

Real estate, plants equipment, mines and similar assets were valued in the 1927 balance sheet at $173,496,000, but against such property the company carried a reserve of $99,177,000 for depreciation and obsolence, leaving a net valuation of $74,319,000. Bonds and stocks of other companies were carried at $7,960,000, and patents, etc., at $21,306,000. After contingency and other reserves amounting to $16,878,000, capital surplus stood at $62,868,000 and further surplus at $107,814,000. Book value of the common stock was $81.33 a share exclusive of valuation of patents, etc., which was equal to $9.78 a share. These figures compare with a declared value of $5 a share for the junior stock.

Since organization, net income has been as thus indicated:

Year	Net Income	A Share
1927	$24,586,872	$10.02
1926	24,072,820	9.78
1925	20,566,592	8.12
1924	18,539,961	7.25
1923	19,148,472	7.54
1922	15,114,472	5.68
1921	7,646,909	2.27

Thus the company has earned on its junior shares since organization a total of $50.66 and there has been paid out in dividends in that period a total of $29. The initial dividend at the rate of $4 a share was declared in 1921. The rate was raised to $6 a share last year.

Canada Gypsum & Alabastine, Ltd., calls for redemption on August 1 next, at 105 and interest, all outstanding 6½ per cent., first mortgage, 15 year sinking fund gold bonds, dated August 1, 1927. Bonds may be surrendered at any prior time to Canadian Bank of Commerce or Montreal Trust Co. and holders will receive interest to date of surrender.

Texas Gulf Sulphur Co. reports for quarter ended March 31, 1928, net income of $3,087,839, after charges, equivalent to $1.22 a share on the 2,540,000 of no-par capital stock outstanding. This compares with $3,046,277, or $1.20 a share, in the preceding quarter, and $2,854,631, or $1.12 a share, in the corresponding quarter a year ago.

Mathieson Alkali Works (Inc.) reports for quarter ended March 31, 1928, net income of $429,463 after provision for depreciation and Federal income tax. This compares with $446,268 in the corresponding period of 1927. Earnings this year were equivalent to $2.62 per share of common stock against $2.74 last year.

Imperial Chemical Industries, Ltd., declares a final ordinary dividend of 5 per cent. making the past fiscal year's total 8 per cent. on this class of shares, and a deferred dividend of 1¾ per cent. This was the first full-year declaration.

Davison Buys Majority Stock in Southern Phosphate for $1,526,000

Davison Chemical Co., Baltimore, purchases through Hayden, Stone & Co. 160,000 shares out of the 239,754 shares of stock outstanding of Southern Phosphate Corp. The transaction involves approximately $1,526,000.

In acquiring this two-third interest in Southern Phosphate Corp., C. Wilbur Miller, president, Davison Chemical Co., announced that it will entail no increase in the capitalization nor any financing by the Davison company.

Through this acquisition, says the Wall St., Journal the Davison company obtains control of one of the largest deposits of phosphate rock in Florida and, in connection with the alliance recently made with Rio Tinto Co. for its supply of pyrites, completes its protection for Davison raw materials.

Southern Phosphate Corp. in 1927 produced more than 250,000 tons of phosphate rock, part of which was used by Davison Chemical Co. This tonnage, plus the additional tonnage of the Davison company, brings the total to approximately 400,000 tons.

Southern Phosphate property contains more than 23,000,000 tons of phosphate rock in the ground, and is equipped with a modern plant.

Mr. Miller has been a director of Southern Phosphate Corp. for about ten years. W. D. Huntington and E. B. Miller, vice presidents of Davison Chemical Co., Chester A. Fulton and B. F. Newcomer, together with Charles Hayden and Richard Hoyt of Hayden, Stone & Co. and W. F. Carey will constitute the board of directors. Southern Phosphate Co., will be officered by Davison Chemical Co. officials.

Dow Stock and Quarterly Dividends

Dow Chemical Co., Midland, Mich., declares stock dividend of 10 per cent. and regular quarterly dividend of $1.50 on common and regular quarterly dividend of $1.75 on preferred stocks. All dividends are payable May 15 to stock of record May 1. Rate on common was previously $1.25 quarterly.

Directors also authorized issuance of 10,000 additional shares of no par common stock to be offered at $100 a share to common stockholders of record May 1 in proportion to their holdings as of that date.

Glidden Co., Cleveland, declares regular quarterly dividend of 1¾% on preferred stock, payable July 1 to stock of record June 15.

Sales for the first three months ended March 31, 1928, show an increase of $567,450 over the corresponding period a year ago. March net profit after interest, federal taxes and depreciation amounted to $202,652.

Liquid Carbonic Corp. reports for six months ended March 31, 1928, net profit of $4,725 after interest, depreciation, etc., equivalent to 4 cents a share earned on 125,000 shares of no-par stock, comparing with net loss of $111,989 in same period of previous year.

General Electric Co. reports net profits for first quarter of 1928 of $11,261,843, equivalent to $1.56 a share on common stock. This compares with $11,028,144 or $1.53 a share in corresponding quarter of previous year.

American Glue Co. reports net income for 1927 of $147,320, equivalent to 84 cents per share on the common stock. This compares with $346,199, or $5.40 a share, in 1926.

Will & Baumer Candle Co. declares regular quarterly dividend of 25 cents per share on common, payable May 15 to stock of record May 1.

Air Reduction First Quarter Higher Than 1927; Earnings at $728,940

Air Reduction Co. Inc., for quarter ended March 31, 1928, reports profit of $728,940 after expenses and reserves but before federal taxes, comparing with $683,361 in first quarter of 1927. Company has outstanding 676,203 no par shares of stock.

Consolidated income account for quarter ended March 31, 1928, compares as follows:

	1928	1927	1926	1925
Gr. income...	$3,503,522	$3,365,861	$3,043,709	$2,349,138
Oper. exp.....	2,285,634	2,226,913	1,966,096	1,548,096
Oper. inc...	$1,217,888	$1,138,948	$1,077,613	$801,042
Deprec., etc...	488,948	455,587	446,995	284,956
*Profit.....	$728,940	$683,361	$630,618	$516,086

*Before federal taxes.

Texas Corp. received $1,999,618 in revenue from its Hoskins Mount sulfur property in 1927, against $981,943 from the same source in 1926, according to "Wall St. Journal." Property is operated under contract by Freeport Sulphur Co. and produced last year 489,435 tons of sulfur. Under contract Texas Corp. is to receive 50% of profit from operation of the property until such time as investment in plant by Freeport Sulphur is repaid that company, after which Texas Corp. is to get 70% of profit. It is believed that these repayments were completed in 1927 and that starting 1928 the 70% provision became operative. Production of Hoskins Mound has been materially increased over 1927 rate.

Roy S. Goddard and J. K. Shaw are elected to board of directors, Celotex Co., Chicago.

W. C. Durant is elected to board of directors, Industrial Rayon Corp.

Carbide Quarterly Earnings Over 1927

Union Carbide & Carbon Corp. and subsidiaries report for quarter ended March 31, 1928, net profit of $6,004,132 after depreciation, interest, taxes, etc., equivalent to $2.25 a share earned on 2,659,733 no-par shares of stock. This compares with $5,346,329 or $2.01 a share in first quarter of 1927.

Consolidated income account for quarter ended March 31, 1928, compares as follows:

	1928	1927	1926	1925
Net aft tax...	$8,329,468	$7,571,152	$8,014,561	$6,319,622
Int. & sub pfd divs.....	295,675	299,763	306,440	256,989
Est. depr. etc.	2,029,661	1,925,060	1,926,126	1,800,382
Net inc.....	$6,004,132	$5,346,329	$5,781,995	$4,262,251

Industrial Rayon Corp. plans construction of additional plant at Covington, Va., with annual manufacturing capacity of 6,000,000 pounds. It is planned to finance this new construction by sale of about $5,500,000 of new stock, which will be offered for subscription to present shareholders.

Samuel Ungerleider, owner of entire outstanding issue of the company's class "B" stock, amounting to 2,000 shares and carrying voting control of the corporation, has offered to exchange these shares for class "A" stock, thus giving all stockholders equal voting rights.

International Paper Co. and subsidiaries report net income for 1927, after all charges of $5,757,904, equivalent to $2.03 a share on approximately 1,000,000 shares of common stock outstanding. This compares with net income of $3,275,284, equivalent to $2.15 a share on 500,000 shares outstanding during previous year.

The Industry's Bonds

1928 Apr. 30 High	1928 Apr. 30 Low	1928 High	1928 Low	1927 High	1927 Low	Sales In April	Sales Since Jan. 1928	ISSUE	Date Due	Int. %	Int. Period	Orig. (1) Offering $
								NEW YORK STOCK EXCHANGE				
106¼	106	...	...	105	99	214	1,017	Am. Agri Chem	1941	7½	F. A.	30,000
102	101¼	...	...	103¼	100¼	253	980	Am. Smelt & Refin "A" 5%	1947	5	A. O.	...
109¼	109¼	...	...	108¼	107¼	98	399	Am. Smelt & Refin "B" 6%	1947	6	A. O.	...
105¼	105¼	...	...	105¼	103¼	854	3,672	Anaconda Copper Mng	1953	6	F. A.	100,000
129	127	...	...	116½	106½	10,025	12,948	Anaconda Copper Mng 7%	1938	7	F. A.	50,000
103	102¼	...	...	97	87	331	2,062	Anglo Chilean	1945	7	M. N.	16,500
102¼	102¼	...	...	103¼	100¼	52	363	Atlantic Refin	1937	5	J. J.	15,000
103¼	103¼	...	...	102¼	100¼	13	89	By product Coke	1945	5½	M. N.	8,000
...	...	...	...	104¼	101¼	23	39	Corn Product Refin	1934	5	M. N.	10,000
113	112½	...	...	111¼	106	325	860	General Asphalt	1939	6	A. O.	5,000
95¼	95¼	...	...	91¼	81¼	9	68	Int. Agric. Corp	1932	5	M. N.	30,000
83	83	...	...	...	...	73	149	Int. Agri. Corp. stamped, extended	1942	5	M. N.	7,020
124¼	124¼	...	...	133¼	104	307	2,056	Lig. Carbonic Corp	1941	6	F. A.	5,000
...	...	...	...	102	98¼	546	2,300	Montecatini	1937	7		
...	...	...	...	95¼	92¼	195	485	Ex War	1937	7		
115¼	115¼	...	...	115	113¼	4	30	People's Gas & Coke	1943	6	A. O.	10,000
...	...	...	...	105¼	101¼	73	716	Refunding	1947	5	M. S.	40,000
103¼	103¼	...	...	104¼	101¼	308	1,370	Standard Oil N. J.	1946	5	F. A.	120,000
108¼	109¼	...	...	101¼	98¼	49	174	Tenn. Cop. and Chem.	1941	6	A. O.	3,000
...	...	...	...	95¼	91	18	34	Va. Iron C. & C.				
								NEW YORK CURB				
101	100¼	103	97	99¼	95¼	69	196	Agri. Mtge. Bk. of Col 46	1946	7	J.O.	...
100¼	100¼	102¼	97¼	99¼	96	131	352	Agri. Mtge. Bk. of Col.	1947	7	J.J. 15	3,000
102¼	102	103¼	101¼	105¼	105	376	1,704	Alum. Co. of Am 52	1952	5		
...	...	...	...	101¼	99	47	609	American Cyan.	1942	5	A. O.	5,000
...	...	...	...	102¼	101½	98	464	Anaconda Cop.	1929	6	J. J.	25,000
101¼	101	101¼	99¼	99¼	95¼	199	1,216	Koppers Gas and Coke	1947	5	J. D.	25,000
102¼	102	103¼	102	103	98	23	62	Natl. Dist. Prod.	1935	6½	J. D. 15	3,500
97¼	97¼	96¼	96¼	98	95¼	614	2,617	Shawinigan W & P	1967	4½		
...	...	...	...	100½	100	1	19	Silica Gel.	1952	6½		
99	99	100	98¼	99¼	96	133	300	Solvay Am. Invest. Corp.	1942	5	M. S.	15,000
101¼	100¼	101¼	100¼	100¼	99	300	1,071	Swift & Co.	1932	5	A. O.	50,000
...	...	...	...	99	90	94	202	U. S. Ind. Alc.	1941	6½	M. N.	...
...	...	...	...	103¼	98¼	35	232	Westvaco Chlorine Prod.	1937	5½	M. S.	2,500
								BOSTON				
103	102¼	103	101¼	102¼	101	146	208	Swift and Co.	1944	5	J. J.	50,000
								CHICAGO				
102	102¼	...	...	103¼	101¼	3	37	Swift and Co.	1944	5	J. J.	50,000
...	...	...	...	101¼	99	...	...	Westvaco Chlorine Prod.	1937	5½	M. S.	2,000

(a) $500.

United Dyewood 1927 Net of $213,431

United Dyewood Corp. reports for year ended December 31, 1927, net income of the holding company of $213,431 after expenses and taxes. This includes only dividends received from subsidiaries. Including undistributed surplus of subsidiaries amounting to $193,457, total net income was $406,888, equivalent after 7% preferred dividends to 93 cents a share on 139,183 shares of common stock.

Net income of subsidiaries was $507,340, from which was deducted $313,883 dividends, leaving a balance of $193,457 carried to surplus.

Committee on stock list, New York Stock Exchange, admits the following to the list:

E. I. du Pont de Nemours & Co., $10,157,500 additional non-voting debenture stock, par $100, making total amount applied for $89, 678,700.

American Cyanamid Co. $5,000,000 15-year sinking fund five per cent. debentures, due October 1, 1942.

United States Industrial Alcohol Co., 240,000 shares of common stock without par value.

Norwegian Hydro-Electric Nitrogen Corp., National City interim certificates for $20,000,000 refunding and improvement gold bonds, series A, 5½ per cent. due 1957.

Soc. Anon. Chimica Reduces Its Capital

Soc. Anon. Adria per l'Industria Chimica, Italy capitalized at 30,000,000 lire in 150,000 shares with a par value of 200 lire each, reduced its capital to 15,000,000 lire by depreciating the par value of the shares to 100 lire each. The old shares were then reduced to 75,000 by doubling, making two shares of 100 lire equivalent to one of 200 lire. Then a new issue of 75,000 shares of 200 lire each was put out, which will be offered to the stock holders, thus bringing the capitalization of the company back to 30,000,000 lire. This is equivalent to assessing the stockholders for the sum of 15,000,000 lire. The Adria is one of two companies in Italy manufacturing caustic soda by the ammonia soda process. The plant is at Monfalcone near Trieste and was formerly part of the Austrian Montangesellschaft.

Sherwin-Williams Co., Cleveland, declares usual extra dividend of 12½ cents and regular quarterly dividend on common payable May 15 to stock of record April 30. Regular quarterly dividend of $1.75 on preferred was also declared, payable June 1 to stock of record May 15.

Snia Viscosa, Turin, Italy, offers stockholders 1,666,667 additional shares of ordinary stock (120 lire) at 150 lire per share at rate of one new share for each four shares held. New shares carry dividend from July 1, 1928.

The Industry's Stocks

1928 Apr. 30 Bid	1928 Apr. 30 Asked	1928 High	1928 Low	1927 High	1927 Low	Sales In April	Sales Since Jan. 1, '28	ISSUES	Par $	Shares Listed	An. Rate	Earnings $-per share-$ 1927	Earnings $-per share-$ 1926
69	69¼	72	60½	199½	134½	41,100	107,900	Air Reduction	No	223,445	$5.00	9 mo. 12.63	10.83
161¼	162½	166½	146	169½	131	186,500	627,100	Allied Chem. & Dye	No	2,178,109	6.00	10.02	9.79
...	...	....	....	124	120	3,600	8,660	7% pfd	100	392,849	6.00		61.28
19	19¼	21½	15½	21½	8½	55,300	141,820	Am. Agricultural Chem	100	333,221	2.00	Nil	...
69	70½	74¼	55½	72½	28½	55,500	170,520	pfd	100	284,552	1.50		3.59
83¼	84	88½	70½	77¼	43¾	627,800	3,418,760	American Can	25	2,473,918	2.00	4.11	4.38
146½	148	147	136½	141½	126	11,500	22,460	pfd	100	412,333	7.00	31.66	33.31
94½	95	111½	56¾	72½	20½	190,500	1,263,420	American Linseed	100	167,500	...		...
104	109	106½	86½	92½	46¾	6,800	47,160	pfd	100	167,500	7.00	7 mo. 6.00	.62
44½	44¾	46½	39	49¾	36½	26,200	109,720	American Metal Ltd	No	594,278	4.00	9 mo. 3.64	3.88
115	115½	125¾	110½	113½	108	1,070	19,956	pfd	100	50,000	7.00	9 mo. 50.27	53.15
187½	187¾	192¾	169	188¾	132¾	229,900	1,070,320	Amer. Smelt and Refin	100	609,980	7.50	6 mo. 19.64	23.38
141¼	142	142	131	133	119½	6,400	20,080	pfd	100	500,000	7.00	6 mo. 17.01	35.52
25¼	25½	30¾	6¾	10½	5¼	196,400	488,700	Amer. Zinc & Lead	25	193,120	...	9 mo. Nil	...
87½	88	98	40	51½	35	61,700	392,940	pfd	25	96,560	...	9 mo. 2 31	...
71	71¾	72½	53¾	60½	41½	1,738,300	2,626,320	Anaconda Copper Mining	50	3,000,000	3.00		4.74
67	67½	70½	55½	63	38	23,900	73,680	Archer Dan. Mid	No	200,000	...	5.76	6.35
113½	115	115½	112¾	112½	106	440	1,400	pfd	100	43,000	7.00	37.31	35.23
85	87	....	....	70	56½	6,500	28,800	Atlas Powder Co	No	260,393	4.00	5.75	7.04
108½	109	110	102½	107	98	420	1,948	pfd	100	90,000	6.00	6 mo. 22.71	26.46
139	139½	139¾	95¼	131¾	104	275,300	446,780	Atlantic Refining	100	500,000	...	9 mo. Nil	11.24
6	6¼	7½	4½	5½	3¾	51,600	160,220	Butte Copper & Zinc	5	600,000	.50	9 mo. 0.09	.32
10	10½	12¾	9	11¼	7¾	18,400	61,460	Butte Superior Mng	10	290,197	2.00	9 mo. 0.23	1.71
73	75½	76½	65	92½	66	8,600	30,620	By Prod. Coke	No	189,931	3.00	9 mo. 4.84	6.00
4½	4¾	5¾	1½	2¾	1½	123,500	201,460	Calla Lead & Zinc	10	723,355	...	9 mo. 0.08	...
21½	21¾	23½	20½	24¾	14½	61,300	333,720	Calumet & Hecla	25	2,005,502	1.50	9 mo. 0.29	.75
61½	61¾	63½	54½	55¾	42	138,900	404,420	Certainteed Prod	No	307,000	4.00	9 mo. 6.07	6.02
120	....	....	....	118¾	106			1st pfd	100	43,000	7.00	9 mo. 56.80	54.30
...	....	43½	37¾	44¾	33½	204,700	506,130	Chile Copper	25	4,435,595	2.50	6 mo. 0.62	2.65
91	92	98½	86½	101¼	66½	19,400	64,540	Columb Carbon	No	204,131	4.00	9.41	6.51
173	174	189½	153½	203	145	41,200	258,800	Commercial Solvents	No	108,861	4.00	9 mo. 9.24	14.13
108	108¾	114¼	80½	86¾	58¾	247,800	848,360	Cont. Can	No	620,000	6.00	7 mo. 7.54	6.36
124¾	127	....	....	126	120	260	1,330	pfd	100	52,930	7.00	7 mo. 86.82	70.55
78	78½	82½	64¾	68	46¾	204,100	985,700	Corn Products	25	2,530,000	2.00	9 mo. 4.01	4.03
146¾	167	146¼	138½	142½	128	3,100	6,100	pfd	100	250,000	7.00	9 mo. 47.62	47.73
52½	53	53	34¾	48½	•26½	186,700	431,860	Davison Chem	No	310,000	...		...
51	53	61	40	42½	36½	48,700	231,300	Devoe & Rayn A	No	95,000	2.40	(†) 5.47	5.22
113	114¾	....	....	114½	101	950	1,440	1st pfd	100	18,096	7.00	6 mo. 53.23	49.70
120	120¾	121½	115	118	105½	14,500	23,640	Dupont deb	100	795,212	6.00	9 mo. 57.04	52.51
375	380	395	310	343¾	168	35,600	287,860	Dupont de Nemours	No	2,661,658	9.50	15.45	13.98
172	173	180	163	175½	126½	26,400	111,940	Eastman Kodak	No	2,055,340	5.00		9.50
130	....	....	....	131½	119½	260	672	pfd	100	61,657	6.00		322.11
121	123	....	....	97	75½	700	1,200	Fed. Mining & Smelting	100	50,400	...	23.36	35.95
74¾	74¾	76¾	66	71¾	46½	352,400	1,134,320	Fleischmann	No	4,500,000	3.00	4.30	4.08
78¾	79	109½	65¾	106½	34	178,800	1,774,720	Freeport Texas	No	729,733	4.00	9 mo. 5.24	2.48
93¼	93¾	94¾	71½	96¾	65	305,600	1,139,500	General Asphalt	100	243,550	...	6 mo. 5.00	8.11
140	141¾	141½	114	144¾	107½	10,300	25,600	pfd	100	68,742	5.00	6 mo. 4.20	27.58
24¼	24¾	25½	20¾	22	14½	163,200	453,780	Glidden	No	400,000	2.00	3.03	3.41
100½	100¾	100½	95	101	86	1,750	8,746	pfd	100	71,922	7.00	6 mo. 23.91	25.98
91	92	105¾	71	78¾	42	132,700	1,671,520	Gold Dust	No	318,586	...	6.20	3.01
66	67	69½	64¼	70¾	43½	18,700	55,640	Household Prod	No	575,000	3.50	6 mo. 5.22	5.22
18¾	18¾	20	13	16¾	6¼	52,000	105,200	Intern. Agri	No	441,695	...	Nil	1.60
74½	75	79	48¾	65	33	23,800	42,600	pfd	100	100,000	....	Nil	14.06
90	90¼	99¾	73¾	89½	38¼	739,900	5,558,000	Intern. Nickel	25	1,673,374	2.00	9 mo. 2.26	3.00
110½	115	....	....	110	103¾	....	....	pfd	100	89,126	6.00	9 mo. 46.94	62.35
55	56	69	50	75	63	1,130	2,488	Intern. Salt	100	60,771	6.00	6 mo. 2.64	8.35
125½	126	133½	111½			249,200	406,360	Johns-Mansville	No	750,000		4.69	4.34
72½	72¾	77¼	63½	78¾	45	68,400	313,200	Liquid Carbonic Corp	No	125,000	3.60	5.90	11.34
51	52½	57½	46	58½	43	12,600	23,040	Mac and Forbes	No	376,748	2.00	9 mo. 2.36	3.30
128½	129½	137¾	118½	132¾	82	60,100	166,760	Matheison Alk	No	147,207	6.00	9 mo. 11.27	9.88
130	....	....	....	120	103	140	590	pfd	100	24,750	7.00	9 mo. 74.06	67.85
19½	19¾	19¾	17½	20¾	13	45,700	128,700	Miami Copper	5	747,114	1.50		1.52

1928 Apr. 30 Bid	Asked	1928 High	Low	1927 High	Low	Sales In April	Since Jan. 1, '28	ISSUES	Par $	Shares Listed	An. Rate	Earnings $-per share-$ 1927	1926
38¾	39	58¼	35¼	56¼	17	45,600	326,340	National Dist. Prod.	No	167,651	...	9 mo. 0.54	...
57¼	58	71¾	55	69¼	43	700	16,660	pfd.	No	109,795	...	9 mo. 1.62	...
126	132¾	136	123	202¾	95	6,300	41,980	National Lead	100	206,554	8.00	10.25	35.33
147	148	....	....	139¼	131½	1,300	5,820	pfd A	100	243,676	7.00		
120	121	121½	112½	116¼	104¼	2,600	6,080	pfd B	100	103,277	6.00		
33	33¼	37	22¾	27¼	19½	123,800	330,600	Penick & Ford	No	433,773	...	9 mo. 2.04	1.37
172¾	173	189½	157	168¾	126	21,700	158,680	Peoples Gas Chi.	100	60,000	8.00	11.15	11.04
39¼	39¾	43¾	37	43¼	36	13,600	71,620	St. Joseph Lead	10	1,951,517	2.50	1.85	4.21
47¼	47½	49	37½	41¼	35½	708,500	1,295,020	Standard Oil Co of N. J.	25	24,262,532	1.00		5.01
40¼	40½	41½	28¾	34½	29¾	911,800	1,381,180	Standard Oi lCo. of N. Y.	25	17,023,928	1.60	0.90	1.9 4
13	13¼	13½	10½	13½	8¼	93,300	146,900	Tenn. Cop. & Chem.	No	794,624	1.00		1.31
73¼	74¼	80¾	68¼	81¾	49	411,400	2,493,640	Texas Gulf Sulfur	No	2,540,000	4.00	4.76	3.69
153¼	154	162½	136½	154½	98¼	266,000	932,000	Union Carbide	No	2,827,470	6.00	9 mo. 6.64	9.07
8	10	....	....	10	3½	....	....	United Dyewood	100	139,183	7.00	9 mo. Nil	...
61½	64¼	67½	45½	49	36¼	40	1,160	pfd	100	39,500	...	6 mo. 2.72	3.88
115½	116	122¼	102¼	111¾	69	89,200	561,580	U. S. Ind. Alc.	100	240,000	5.00	6.00	7.04
120½	122	121	119	121	107½	500	1,570	pfd	100	60,000	7.00		35.16
50	50½	51¾	41¼	48¼	26¼	37,000	82,390	Va. Car. Chem Com. 6% pfd	100	213,350	...		6.73
97	97½	62¾	60¼	91	73	5,700	18,290	7% pfd	100	142,910	7.00		17.54
								NEW YORK CURB					
...	....	31½	27	31¼	30	8,000	42,520	Acetol Prod.	No	60,000			
...	....	150¾	120	145½	67¾	28,800	62,370	Aluminum Co. of America	No	1,427,625	...	4.02	...
...	....	109¾	105½	43½	25	3,900	108,440	"B"	20	263,772	1.20	3.09	3.49
...	....	17⅜	13	18¼	3¾	10,900	53,140	Amer. Rayon Prod.	No	110,000	1.00		Nil
..	....	36¼	25½	29	11	25,100	87,540	Amer. Solvents & Chem. pfd.	No	160,000	...		Nil
..	....	35	26½	31½	14	12,800	37,200	Anglo Chile Nitrate	No	1,756,750	...	Loss	Loss
...	....	....	....	43½	22	3,400	9,280	Canad. Ind. Alc.	No	800,000	1.28	2.49	2.63
...	....	....	....	....	....	510	....	Caslin Co.					
...	....	100⅜	70½	117	44	18,400	130,340	Celanese Corp of Am	No	1,000,000	...	1.91	1.80
...	....	....	....	129¾	60	1,300	16,200	Celluloid Co.	100	70,980	...		...
..	....	....	....	133¾	113¾	300	4,790	1st pfd	100	24,551	...		...
...	....	....	....	91	84	800	3,530	Celotex pfd.	No	164,730	3.00		5.06
...	....	161	117½	126	76½	4,000	10,320	Chesebro Mfg Co.	25	120,000	4.00		8.06
...	....	....	....	38¼	24¼	1,400	20,120	Courtaulds	£1	£12,000,000	16½%		18.18
...	....	237	192	202	180	60	908	Hercules Powder	100	147,000	16.37	9 mo. 16.37	18.18
...	....	....	....	121	114	420	618	pfd.	100	111,392	7.00	28.04	30.82
...	....	13⅜	7½	10	7½	3,900	7,780	Heyden Chem.	10	150,000	...		0.32
...	....	26	17⅜	24¼	4¼	42,500	404,680	Indus. Rayon 'A"	No	452,544	...		2.27
...	....	....	....	39	37½	1,400	7,360	Monsanto Chem.	No	110,000	8.09	9 mo. 6.11	5.60
...	....	....	....	194¾	178	4,940	9,793	N. J. Zinc	100	490,816	8.00	14.34	14.34
...	....	....	....	112	60½	4,600	22,640	Palmolive Peet	No	1,500,000	...	5.04	2.86
...	....	....	....	105½	84	225	1,355	Penn Salt	50	150,000	5.00	8.09	6.08
...	....	....	....	14¾	8	3,200	8,980	Pyrene Mfg.	10	223,158	2%	6.42	2.38
287	222½	....	....	335	160	350	1,650	Royal Baking Powder					
...	....	....	....	110	100	250	750	pfd					
...	....	....	....	68¼	44	200	1,200	Sherwin William	25	594,445	3.00	6.42	5.59
...	....	29	17	20¾	13¾	25,200	45,920	Silica Gel	No	600,000	...		...
...	....	....	....	81½	64¾	134,700	495,620	Standard Oil Co. of Indiana	25	9,136,618	...		6.03
...	....	9½	7¼	12	5	3,100	5,900	Snia Viscosa	150 lire	6,666,666⅔	.72		6.86
...	....	....	....	21	13¾	1,050	2,540	Swan & Finch	25	34,458	.87½		...
...	....	133	125	130	115¾	3,950	26,180	Swift & Co.	100	1,500,000	8.00	8.13	10.43
...	....	628½	450	499	145	4,970	67,668	Tubize "B"	No	78,868	...		...
...	....	127	127	110½	82½	1,100	10,715	U. S. Gypsum	20	687,875	8%	10.10	11.35
...	....	73	67	77	50½	7,500	36,200	Wesson Oil and Snow	No	300,000	4.00	5.26	8.71
								CLEVELAND					
115	115	120	104	115	74½	180	2,147	Cleve-Cliff Iron	No	400,000	4.00		
175	180	165	112½	108	70	248	818	Dow Chem.	No	100,000	4.00		...
106½	....	....	....	106½	100	....	....	pfd.	100	30,000	7.00		...
99	....	25½	24¼	21¼	15½	1,260	1,380	Glidden	No	400,000	2.00	3.03	3.41
...	....	....	....	100	84	46	1,039	pfd.	100	71,922	7.00	6 mo. 23.91	25.98
139	143	142	136	135	127	128	1,785	Grasselli	100	215,704	...	11.27	10.24
109	110¾	111	106	109½	102½	370	2,567	pfd.	100	123,742	6.00		23.68
22	25	25	18¼	24¼	4¼	248	1,182	Indus. Rayon "A"	No	452,544	...		2.27
69⅞	70¼	69¼	65⅞	70	44	1,674	3,817	Sherwin William	25	594,445	3.00	6.42	5.59
...	109	109¼	107	109	104	639	2,016	pfd	100	125,000	6.00		...
26	27	27¼	25	...	...	6,205		Wood Chemical Prod. "A"	No	20,000	2.00		...
								PITTSBURGH					
...	....	22	21	33¼	18	520	1,511	Am. Vitrified Prod.	50	70,000	7.50	2.95	2.19
								CHICAGO					
63	64	69	49	86	53	5,115	13,243	Celotex	No	170,456	3.00	3.31	
...	....	88	80	92	82	1,120	2,704	pfd	100	52,534	7.00		
56	57	57	38½	39	37	7,465	36,412	Monsanto Chem.	No	110,000	...	9 mo. 6.11	5.60
130½	130¾	132¼	124¾	130	115½	4,686	21,098	Swift & Co.	100	1,500,000	8.00	8.13	10.43
...	....	....	....	152½	99	....	372	Union Carbide	No	2,827,470	6.00	9 mo. 6.64	9.07
73	74	93	69	110¼	82	13,430	69,385	U. S. Gypsum	20	687,875	8%	10.10	11.35
								CINCINNATI					
...	....	128	125	125¾	113½	50	165	Fleishmann pfd.	100	12,295	6.00	1,589.49	1,501.80
...	....	280	249	250	177	3,992	13,096	Proc. & Gam.	20	1,250,000	4.75		9.17
								BOSTON					
21¼	25¼	23¾	20¼	17¼	14¼	10,480	59,874	Calumet & Hecla	25	2,005,502	1.50	9 mo. 0.29	.75
130½	131	133	124¾	130½	115	1,696	7,583	Swift & Co.	100	1,500,000	8.00	8.13	10.43
								ST. LOUIS					
...	....	121	118½	...	...	18	337	Certainteed Prod. pfd.	100			56.80	
...	....	47	43	36	36	215	1,146	South Acid and Sulfur Co.	No	52,000	3.00		...
								PHILADELPHIA					
...	....	109½	92	105½	74½	1,766	6,192	Penn. Salt.	50	150,000	5.00	8.09	6.08
...	....	135¼	111½	118½	89½	252,380	601,403	United Gas Imp.	50	2,130,088	...		4.59
								MONTREAL					
33⅞	31	...	...	39½	20	...	....	Asbestos Corp.	No	200,000	1.50		1.02
92½	92½	...	...	98	82½	...	....	pfd.	100	74,561	7.00		
43	42½	...	...	43½	21½	...	....	Canada. Ind. Alc.	No	(d)800,000	1.28	2.49	2.63
86	85	...	...	*277½	67	...	....	Shawinigan W. & P.	No	1,100,000	2.00	2.63	
...	...	...	...	207	142	...	....	Sherwin William of Can.	100	40,000	6.00	8.84	9.54
...	...	...	...	127	117	...	....	pfd	100	34,350	7.00		
								BALTIMORE					
125	125	...	...	39½	37	...	....	Davison Chem.	No	310,000	...		...
...	....	28¼	17	20½	15	16,050	23,026	Silica Gel	No	600,000	...		...
								UNLISTED					
74	78	...	...	...	...	...	....	Casein Co.	100	21,196	7.00		7.10
138	143	...	...	89	55	...	....	Merck & Co pfd.	100	33.950	4.00		7.60
...	...	...	...	...	...	...	....	Merrimac	50	70,560	...		...
...	...	...	...	...	...	...	....	Newport Chem.	1	912,198	4%		

*Old stock. † Combined A & B. (b) June 18 to Dec. 30. (d) 1927 earnings on 969,480. (e) Bid & Asked. (f) Thru Jan. 28 (g) High low.

The Trend of Prices

General Business In All Groups Markedly Improved During April

Reduction in Diphenylguanidine Price Outstanding Movement of Month—Alcohol Market Shows Improvement—Phenol Routine and Easy—Quicksilver Off—Dynamite Glycerin in Better Position—Ammonia Continues Strong.

Business in all branches of the chemical industry seemed to take a decided upward turn during April. In practically all quarters, reports of better business are heard. During the previous month, sellers were not so optimistic as to conditions in general, but April proved a month fully up to their expectations and in some cases in excess of expectations. Of course, beginning with the latter part of this month, a gradual tapering off during the summer months is looked for in all except seasonable items.

A sharp decline in the price of diphenylguanidine was probably the outstanding price movement of the month under review. This was brought about by the invalidating of the Weiss patent on diphenylguanidine and the consequent eligibility of several domestic manufacturers to make this accelerator independently. The prospects of competition for business immediately forced the reduction in price. Manufacturers admit that any return to the former price level is extremely unlikely and that the current price may be accepted as a true market level.

Alcohol Market Improving

The alcohol market is in a better position than has been the case for some time past. Producers are holding up to the schedule so far as can be ascertained and the jobbing trade has come to realize that the expected further weakening of the market will probably not materialize. This has resulted in an increasing demand from this quarter. The announced merger of three of the smaller producing companies into one unit of considerable size has theoretically, if not practically, had a strengthening effect on the market. Methanol on the other hand continues in a very routine position with considerable competition among distributors for what business there is and a generally soft market prevailing.

As indicated in the last report the mercury market advanced during the month but at the time of going to press the market shows signs of another recession. Sales during the month of April were limited and the market here is holding up based on the strength on the European market. Stocks on the other side are known to be quite plentiful and another decline during the coming month to the levels which prevailed in late March and April will not be surprising.

Sellers of glycerin are making valiant attempts to support the market which is in a somewhat better position going into the month of May than it was in April, this being particularly true of the dynamite grade. However, consuming interest in any grade is routine at best and it is reported that alcohol manufacturers contemplate following the lead of the largest consumer of dynamite glycerin in producing glycerin from molasses mash. Practically all soapmakers have good sized stocks of crude on hand and the market for both saponification and lye grades are none too strong.

Copper sulfate continues in a very firm position and there is no reason to look for a change in conditions with the best consuming season of the year directly ahead. The agricultural trade is now beginning to buy and the presence of export inquiries from the Far East in this market during recent weeks would indicate a shortage both there and in the European primary markets. Prices of European sulfate are at a level which allows American producers to get more than their ordinary quota of business in Canada this year.

A steady demand for supplies of calcium chloride is developing and sellers continue optimistic for a good year. This opinion is based on the volume of business which has been placed to date, in some cases almost double that of last year. The tendency to shade inside quotations, which was brought about by the entry of a new manufacturer in the field, is not so noticeable now that the season is under way.

Phenol Routine and Lower

The market price of phenol is suffering as a result of competition for what meager business there is at present. Reports are heard of sharply reduced quotations from the open market whenever an inquiry is on the market. As most of the business is placed on an annual basis, spot demand is practically at a standstill and it is not be straining a point to class the market as nominal.

There has been a somewhat better inquiry for white sal ammoniac during the past three weeks following quite a protracted period of slow business which witnessed a reduction in the price three times by the domestic manufacturers to eliminate imported competition. This move was successful, and what business there is to-day is being taken by American sellers. As was anticipated an advance equal to the duty increase on barium chloride was put into effect by the importers and the usual last minute rush to get stocks on this market before the advance was effective finds good stocks of imported goods here offered at quoted levels, with a possibility of shading on firm business. It remains to be seen what steps will be taken by American manufacturers to capture this market which has long been in imported hands as a result of a market maintained below American production costs. Barium chloride is still the object of marked competition between American makers and importers. The former are naming prices considerably below their schedule level in an effort to take business, but as far as can be ascertained, are still $1.00 or $1.50 ton over the inside imported quotation. Much the same condition exists in zinc ammonium chloride which is moving in rather limited volume in the East. Domestic producers are reluctant to meet the low levels established by importers and what business there is in this territory is going to the latter.

Strength in anhydrous ammonia continues of outstanding interest in its group. Sellers report a good contract withdrawal for anhydrous and aqua ammonia, liquid chlorine and caustic soda, though the spot inquiry for all of these is limited, as might be expected after the good contract season. Occasional imported competition is apparent in chlorate of soda, but as a usual thing domestic dealers are taking the bulk of business.

Cottonseed and Linseed Strong

A continuation in the strength of cottonseed oil, an unusual demand for stearic acid and the nominal condition of Japanese rapeseed oil have been features of this market since our last report. The advance of both crude and PSY cottonseed oil have been steady and at this writing indications are of a firmer market to come. Chinawood oil is also a bit higher than at the time of our last report, though in the interim the market has advanced even above current levels and is now reacting downward. At the moment there is no particular indication of strength either on this market or in China. Cod oil is very scarce and an advance of 1c @ 2c gal. has been experienced during the month. Linseed oil is in a strong and advancing position, showing some gain for the month, though consumer interest is surprisingly routine for this season of the year.

Prices Current

Heavy Chemicals, Coaltar Products, Dye-and-Tanstuffs, Colors and Pigments, Fillers and Sizes, Fertilizer and Insecticide Materials, Naval Stores, Fatty Oils, etc.

Chemical prices quoted are of American manufacturers for spot New York, immediate shipment, unless otherwise specified. Products sold f. o. b. works are specified as such. Imported chemicals are so designated. Resale stocks when a market factor are quoted in addition to makers' prices and indicated "second hands."

Oils are quoted spot New York, ex-dock. Quotations f.o.b. mills, or for spot goods at the Pacific Coast are so designated.

Raw materials are quoted New York, f. o. b., or ex-dock. Materials sold f. o. b. works or delivered are so designated.

The current range is not "bid and asked," but are prices from different sellers, based on varying grades or quantities or both. Containers named are the original packages most commonly used.

Standard Purchasing Power of the Dollar: July 1914 $1.00 - Jan. 1927 68.7c - July 1927 71.7c - April 1928 67.8c

Acetone — There has not been any change in the position of this item during the month just past. Distributors are doing an average business for the season and the market is well maintained at 13c lb. for C. P. material.

Acid Acetic — There has been a fairly good consuming demand during the month and though leading sellers are holding the market at the quoted levels there has been some competition noted from one source at figures slightly under the prevailing market.

Acid Citric — Sellers are holding firm to the levels of 46c lb. to which it advanced last month, but the unseasonable weather to date has somewhat retarded the consuming demand. Basically the market continues in the firm position which characterized it during the last part of March and early April.

Acid Cresylic — Prices remain unchanged over the month with importers making sales on the basis of 71c @ 72c gal. for dark acid and 73c @ 75c gal. for light. There have been some good sized arrivals from abroad during the period which have been readily taken by the consuming trades.

Acid Lactic — There has not been any change in the position since last reported and manufacturers continue to sell to an average consuming interest at 4¾c @ 5½c lb. for 22% light and 12c @ 12½c lb. for 44% dark.

Acid Oxalic— With manufacturers still shipping out goods up to their daily capacity there has not been any change from the firm position which has characterized the market for months past. Sales have been made during the past two weeks at 11c lb., New York.

Acid Tartaric — The domestic price is held firm in spite of a somewhat slackened interest on the part of the consumers. The market is well maintained in all directions at 37c @ 38c lb.

Alcohol — The market in this territory is now in a better position than it has been for a long while past. There has not been any change in the price of the denatured grades but the producers are much firmer in their views and this has had the effect

1914 July	1927 High	1927 Low	1927 Aver.		Current Market		1928 High	1928 Low
.....	.24	.24	.24	Acetaldehyde, drs lc-1 wks...lb.	.18½	.21	.26	.18½
.....	.20	.20	.20	Acetanilid, tech, 150 lb bbl....lb.	.23	.24	.24	.23
.....	.29	.29	.29	Acetic Anhydride, 92-95%, 100 lb cbys.....lb.	.29	.35	.35	.29
.....	.38	.32	.37	Acetin, tech drums.....lb.				
.02½	.12	.12	.12	Acetone, CP, 700 lb drums c-1 wks.....lb.	.....	.13	.13	.13
1918	1.65	1.65	1.65	Acetone Oil, drs NY.....gal.	1.65	1.75	1.75	1.65
.....	.42	.42	.42	Acetyl Chloride, 100 lb cby...lb.	.42	.45	.45	.42
				Acids				
				Acid Acetic, 28% 400 lb bbls				
1.50	3.38	3.38	3.38	c-1 wks.....100 lb.	.....	3.38	3.38	3.38
.....	11.92	11.92	11.92	Glacial, bbl c-1 wk...100 lb	.....	11.92	11.92	11.92
.....	.98	.98	.98	Anthranilic, refd, bbls.....lb.	.98	1.00	1.00	.98
.....	.80	.80	.80	Technical, bbls.....lb.	.....	.80	.80	.80
1.00	1.60	1.25	1.38	Battery, cbys.....100 lb.	1.60	2.25	2.25	1.60
.23	.57	.57	.57	Benzoic, tech, 100 lb bbls...lb.	.57	.60	.60	.57
.07½	.08½	.08½	.08½	Boric, crys. powd, 250 lb bbls.....lb.	.08½	.11	.11	.08½
.....	1.25	1.25	1.25	Broenner's, bbls.....lb.	.....	1.25	1.25	1.25
1917	.85	.80	.84	Butyric, 100% basis cbys...lb.	.85	.90	.90	.85
1917	4.90	4.85	4.89	Camphoric.....lb.	.....	4.85	4.85	4.85
.....	.25	.25	.25	Carbolic, 10%, 50 gal bbls..lb.	.13	.14	.28	.13
.....	.15	.15	.15	Chlorosulfonic, 1500 lb drums wks.....lb.	.15	.16	.16	.15
1918	.37	.25	.29	Chromic, 99%, drs extra...lb.	.25	.30	.30	.25
.....	1 00	1.00	1.00	Chromotropic, 300 lb bbls..lb.	1.00	1.06	1.06	1.00
.53	.44½	.43	.43⅝	Citric, USP, crystals, 230 lb bbls.....lb	.46	.59	.44½	.59
.....	.95	.95	.95	Cleve's, 250 lb bbls.....lb.	.95	.97	.97	.95
1918	.60	.57	.61	Cresylic, 95%, dark drs NY.lb.	.71	.73	.71	.68
1918	.70	.60	.63½	97-99%, pale drs NY....lb.	.73	.80	.74	.72
1918	.11	.10	.10½	Formic, tech 85%, 140 lb cby.....lb.	.11	.12	.12	.11
1918	.50	.50	.50	Gallic, tech, bbls.....lb.	.50	.55	.55	.50
1918	.74	.69	.72	USP, bbls.....lb.	...	.74	.74	.74
.....	1.00	1.00	1.00	Gamma, 225 lb bbls wks...lb.	1.00	1.06	1.06	1.00
1918	.57	.57	.57	H, 225 lb bbls wks.....lb.	.57	.63	.63	.57
.....	.67	.65	.65½	Hydriodic,USP,10%soln cbylb.	...	.67	.67	.67
.....	.45	.45	.45	Hydrobromic, 48%, coml, 155 lb cbys wks.....lb.	.45	.48	.48	.45
.....	.80	.80	.80	Hydrochloric, CP, see Acid Muriatic.....				
.03	.06	.06	.06	Hydrocyanic, cylinders wks lb.	.80	.90	.90	.80
.....	.11	.11	.11	Hydrofluoric, 30%, 400 lb bbls wks.....lb.	.....	.06	.06	.06
.....	.85	.85	.85	Hydrofluosilicic, 35%, 400 lb bbls wks.....lb.	.....	.11	.11	.11
.019	.05½	05½	.05½	Hypophosphorous, 30%, USP, demijohns.....lb.	.....	.85	.85	.85
.04	.13	.13	.13	Lactic,22%,dark,500 lb bbls lb.	.04½	.05½	.06	.04½
.....	.52	.52	.52	44%, light, 500 lb bbls ...lb.	.12	.12½	.13½	.12
.....	.60	.60	.60	Laurent's, 250 lb bbls.....lb.	.52	.54	.54	.52
1918	.07½	.07½	.07½	Metanilic, 250 lb bbls.....lb.	.60	.65	.65	.60
1918	.01	.01	.01	Mixed Sulfuric-Nitric..... drs wks.....N unit	.07½	08	.08	.07½
.....	.21	.18	.19½	drs wks.....S unit	.01	.01½	.01½	.01
.....	1.65	1.65	1.65	Monochloroacetic, tech bbl.lb.	.18	.21	.21	.18
1.15	1.35	1.35	1.35	Monosulfonic, F Delta bbls.lb.	.....	.65	.65	.65
1.30	1.70	1.70	1.70	Muriatic, 18 deg, 120 lb cbys c-1 wks.....100 lb.	.....	1.35	1.35	1.35
.....	.95	.95	.95	20 degrees, cbys wks..100 lb.	1.70	1.80	1.80	1.70
1918	.55	.55	.55	N & W, 250 lb bbls.....	.85	.95	.95	.85
3.37½	5.00	5.00	5.00	Naphthionic, tech, 250 lb .....lb.	.55	.59	.59	.55
4.50	6.00	6.00	6.00	Nitric, 36 deg, 135 lb cbys c-1 wks.....100 lb.	.....	5.00	5.00	5.00
.07½	.11½	.11	.11	40 deg, 135 lb cbys, c-1 wks.....100 lb.	.....	6.00	6.00	6.00
.036	.08	.07	.07½	Oxalic, 300 lb bbls wks NY..lb.	.11	.11½	.11½	.11
.23	.19	.16	.16½	Phosphoric 50%, 150 lb cby.lb.	.08	.08½	.08½	.08
1918	.50	.50	.50	Syrupy, USP, 70 lb drs...lb	.....	.16	.16	.16
.50	.45	.30	.41½	Picramic, 300 lb bbls.....lb	.....	.50	.50	.50
.....	.86	.86	.86	Picric, kegs.....lb.	.40	.50	.50	.40
.22½	.27	.27	.27	Pyrogallic, technical, 200 lb bbls.....lb.	.....	.86	.86	.86
1918	.15	.15	.15	Salicylic, tech, 125 lb bbl...lb.	.27	.32	.32	.27
1.00	1.60	1.60	1.60	Sulfanilic, 250 lb bbls.....lb.	.15	.16	.16	.15
1.00	1.20	1.20	1.20	Sulfuric, 66 deg, 180 lb cbys lc-1 wks.....100 lb.	1.60	1.95	1.95	1.60
.87½	1.10	1.10	1.10	1500 lb dr wks.....100 lb.	.....	1.20	1.20	1.20
1.25	1.50	1.50	1.50	60°, 1500 lb dr wks..100 lb.	.....	1.12½	1.12½	1.12½
.....	42.00	42.00	42.00	Oleum, 20%, 1500 lb drs lc-1 wks.....100 lb.	.....	1.52½	1.52½	1.52½
.55	.30	.30	.30	40%, lc-1 wks net.....ton	.....	42.00	42.00	42.00
.30½	.37	.29½	.32½	Tannic, tech, 300 lb bbls...lb.	.30	.40	.40	.30
.....	.85	.85	.85	Tartaric, USP, crys, powd, 300 lb bbls.....lb.	.37	.38	.38	.34½
				Tobias, 250 lb bbls.....lb.	.....	.85	.85	.85

Carbitol and Butyl Carbitol

Two New Lacquer Solvents

IN CONTINUATION of its program involving the synthesis of new organic compounds, the Carbide and Carbon Chemicals Corporation is pleased to announce the commercial availability of Carbitol . (Diethylene Glycol mono ethyl ether) and Butyl Carbitol (Diethylene Glycol mono butyl ether).

These two compounds are excellent solvents for nitrocellulose, resins and many oils. Their high boiling points (Carbitol 186° C., Butyl Carbitol 222° C.) make them particularly valuable in the formulation of baking lacquers and artificial leather dopes. Their use in small quantities gives better body to brushing lacquers and aids in the production of smoother films.

Samples and specifications may be secured by addressing

CARBIDE AND CARBON CHEMICALS CORPORATION
Carbide and Carbon Building
30 East Forty-second Street, New York City

UCC
Unit of Union Carbide and Carbon Corporation

Prices Current and Comment

Standard Purchasing Power of the Dollar: July 1914 $1.00 - Jan. 1927 68.7c - July 1927 71.7c - April 1928 67.8c

of bringing in quite a bit of consuming business which was waiting to see which way the market was going to turn. The recent consolidation of three of the smaller concerns with the consequent reduction in the size of the producing field is taken as a reason for expecting still further firmness.

Albumen — Prices on both grades of egg albumen are at the same level as when last reported. The market which has been gradually declining over a two year period, has become a little firmer recently. This is probably due to the firm condition and high prices existing in China combined with the opening of the contract season here. Importers report a fair demand from contract buyers. Technical is quoted at 70c @ 75c lb. and edible at 79c @ 84c lb. No price changes are reported in vegetable albumen with a brisk demand for both edible and technical grades. Blood albumen is also unchanged.

Ammonia — Neither anhydrous or aqua have recorded any price change during the month just past. The anhydrous grade is still the firmer and though the demand for spot shipments has not been very brisk, producers are not oversupplied with stocks, as a result of which the market is strong. Of the two aqua is in somewhat better supply. Sellers are holding the market firm at 13½c lb. for anhyrous and 3c lb. for aqua in all directions.

Ammonium Chloride — The consuming inquiry for white ammonium chloride has been better for the past three weeks, this being particularly true of the battery trade. As a result the market is steadier at $4.65 100 pounds than it has been for some time past. It is a domestic manufacturers market, as importers are apparently unable to compete at these levels. No change from the present situation is expected for the present, at least.

Ammonium Persulfate — The fur dyeing trade continues to take the main bulk of the domestic output. Though sellers have reduced their ideas a bit from the level established following the first flurry, the price is still high and held at 27½c @ 29c lb. as to quantity. The current strong demand is expected to abate a month or six weeks and the price should decline to its former level.

Ammonium Sulfate — Now that the season is drawing to a close, demand is slackening and prices declining. Activity has been more pronounced during the past season than in any in the last five years. Plants have been operated day and night to keep up with demand. Not only has volume been larger but prices have been

1914	1927				Current	1928	
July	High	Low	Aver.		Market	High	Low
.....	2.75	2.00	2.60	Trichloroacetic, bottles.....lb.	.....	2.75	2.75	2.75
.....	2.00	2.00	2.00	Kegs.....lb.	.....	2.00	2.00	2.00
.....	1.00	1.00	1.00	Tungstic, bbls.....lb.	1.00	1.25	1.25	1.00
.19	.45	.45	.45	Albumen, blood, 225 lb bbls...lb.	.43	.47	.55	.43
.40	.95	.80	.87	Egg, edible.....lb.	.79	.84	.84	.79
.....	.92	.77	.82	Technical, 200 lb. cases..lb.	.70	.75	.80	.70
1918	.60	.60	.60	Vegetable, edible.....lb.	.60	.65	.65	.60
.....	.50	.50	.50	Technical.....lb.	.50	.55	.55	.50
.....	.20	.19	.19½	Alcohol Butyl, Normal, 50 gal drs c-l wks.....lb.	.....	18.25	.20	.18½
.....	.20½	.19½	.19½	Drums, lc-l wks.....lb.	.....	18.75	.19½	.18½
.....	.19½	.18½	.19	Tank cars wks.....lb.	.....	17.75	.19	.17½
.....	.....	.....	.....	Amyl (from pentane) drs c-l wks.....gal.	1.90	2.25	2.25	1.90
1.70	1.70	1.70	1.80	Diacetone, 50 gal drs del...gal.	1.70	1.80	1.80	1.70
2.50	3.70	3.70	3.70	Ethyl, USP, 190 pf, 50 gal bbls.....gal.	.....	2.65	3.70	2.65
.....	.50	.50	.50	Anhydrous, drums.....gal.	.....	.66½	.55	.50
1919	.52	.37½	.46	Completely denatured, No. 1, 190 pf, 50 gal drs drums extra.....gal.	.....	.48½	.52	.48½
1918	.50	.29	.42	No. 5, 188 pf, 50 gal drs. drums extra.....gal.	.....	.43	.50	.43
.....	.46	.25	.40	Tank, cars.....gal.	.....	.41	.46	.41
.....	1.00	1.00	1.00	Isopropyl, ref, gal drs.....gal.	1.00	1.25	1.25	1.00
.....	1.00	1.00	1.00	Propyl Normal, 50 gal dr...gal.	.....	1.00	1.00	1.00
.....	.80	.80	.80	Aldehyde Ammonia, 100 gal dr lb	.80	.82	.82	.80
1918	.65	.65	.65	Alpha-Naphthol, crude, 300 lb bbls.....lb.	.....	.65	.65	.65
1917	.35	.35	.35	Alpha-Naphthylamine, 350 lb bbls.....lb.	.35	.37	.37	.35
1.75	3.25	3.15	3.08½	Alum Ammonia, lump, 400 lb bbls, lc-l wks.....100 lb.	3.25	3.30	3.30	3.25
5.00	5.25	5.25	5.25	Chrome, 500 lb casks, wks .....100 lb.	5.25	5.50	5.50	5.25
4.00	3.50	3.10	3.43	Potash, lump, 400 lb casks wks.....100 lb.	3.10	3.20	3.20	3.10
5.00	5.25	5.25	5.25	Chrome, 500 lb casks wks .....100 lb.	5.25	5.50	5.50	5.25
.....	3.75	3.75	3.75	Soda, ground, 400 lb bbls wks.....100 lb.	.....	3.75	3.75	3.75
17.00	27.00	26.00	26.08	Aluminum Metal, c-l NY.100 lb.	.....	24.30	26.00	24.30
.....	.35	.35	.35	Chloride Anhydrous, 275 lb drums.....lb.	.35	.40	.40	.35
.12	.17	.17	.17	Hydrate, 96%, light, 90 lb bbls.....lb.	.17	.18	.18	.17
.....	.23	.23	.23	Stearate, 100 lb bbls.....lb.	.18	.22	.24	.18
1.25	1.75	1.75	1.75	Sulfate, Iron, free, bags c-l wks.....100 lb.	.....	1.75	1.75	1.75
.87½	1.40	1.35	1.35½	Coml, bags c-l wks..100 lb.	.....	1.40	1.40	1.40
.....	1.15	1.15	1.15	Aminoazobenzene, 110 lb kegs.lb.	.....	1.15	1.15	1.15
				Ammonium				
.25	.13½	.10	.10½	Ammonia, anhyd, 100 lb cyl...lb.	.....	.13½	.13½	.13½
.04½	.03	.02½	.03	Water, 26°, 800 lb dr del....lb.	.....	.03	.03	.03
.....	.21	.21	.21	Bifluoride, 300 lb bbls.....lb.	.21	.22	.22	.21
.08	.08½	.08½	.08½	Carbonate, tech, 500 lb cs...lb.	.08½	.09	.09	.08½
6.25	5.05	4.85	5.00	Chloride, White, 100 lb. bbls. wks.....100 lb.	4.65	5.15	5.15	4.65
.05½	.07	.05½	.06	Gray, 250 lb bbls wks....lb.	5.40	5.75	5.75	5.40
.10	.11	.11	.11	Lump, 500 lb cks spot....lb.	.11	.11½	.11½	.11
.....	.15	.15	.15	Lactate, 500 lb bbls.....lb.	.15	.16	.16	.15
.15	.06	.06	.06	Nitrate, tech, casks.....lb.	.06	.10	.10	.06
.....	.27½	.27½	.27½	Persulfate, 112 lb kegs.....lb.	.27½	.29	.38	.27½
.....	.18	.18	.18	Phosphate, tech, powd, 325 lb bbls.....lb.	.....	.18	.18	.18
2.60	2.30	2.55	2.41	Sulfate, bulk c-l.....100 lb.	.....	2.70	2.90	2.40
2.60	2.55	2.35	2.42	Southern points.....100 lb.	.....	2.70	3.00	2.55
.....	59.70	56.85	57.56	Nitrate, 26% nitrogen 31.6% ammonia imported bags.....ton	.....	60.85	60.85	60.85
.....	.55	.55	.55	Sulfocyanide, kegs.....lb.	.55	.60	.60	.55
1.55	2.25	1.90	2.10½	Amyl Acetate, (from pentane) drs.....gal.	1.90	2.25	2.25	1.90
				Alcohol, see Fusel Oil.....				
.10½	.15½	.15	.15	Aniline Oil, 960 lb drs.....lb.	.15½	.16½	.16½	.15½
.32	.41	.41	.41	Annatto, fine.....lb.	.41	.48	.48	.41
.....	.90	.90	.90	Anthraquinone, sublimed, 125 lb bbls.....lb.	.90	1.00	1.00	.90
.....	.11½	.14	.12	Antimony, metal slabs, ton lots .....lb.	.....	.10½	.11½	.09½
.03½	.15½	.14	.15	Needle, powd, 100 lb cs ....lb.	.....	.11	.12	.10
1918	.17	.17	.17	Chloride, soln (butter of) sbys.....lb.	.17	.18	.18	.17
.06	.16½	.16½	.16½	Oxide, 500 lb bbls.....lb.	.....	.11	.12	.10
.11½	.28	.25½	.26½	Salt, 66%, tins.....lb.				
.18	.20	.16	.17½	Sulfuret, golden, bbls.....lb.	.16	.20	.20	.16
.15	.42	.37½	.38	Vermilion, bbls.....lb.	.38	.42	.42	.38
.14	.18	.18	.18	Archil, conc, 600 lb bbls.....lb.	.17	.19	.19	.17
.08	.12	.12	.12	Double, 600 lb bbls.....lb.	12	.14	.14	.12
.....	.16	.14	.15	Triple, 600 lb bbls.....lb.	.15	.16	.16	.15
.....	.15	.12½	.13½	Argols, 80%, casks .....lb.	.....	.08	.08	.08
.....	.08	.03	.06½	Coude, 30%, casks.....lb.	.15	.16	.16	.15
.05½	.10½	.10½	.10½	Arsenic, Red, 224 lb kegs, cs..lb.	.10½	.11	.11	.10½
.03	.04	.03½	.04	White, 112 lb kegs.....lb.	.04	.04½	.04	.03½
.....	14.75	14.75	14.75	Asbestine, c-l wks.....ton	.....	14.75	14.75	14.75
.....	47.50	47.50	47.50	Barium, Carbonate, 200 lb bags wks.....ton	57.00	58.00	57.00	47.00
.13	.12	.12	.12	Chlorate, 112 lb kegs NY...lb.	.12	.12½	.12½	.12
30.00	65.00	57.50	60.70	Chloride, 800 lb bbl wks...ton	54.00	60.00	60.00	54.00
1916	.13	.13	.13	Dioxide, 88%, 690 lb drs...lb.	.13	.13½	.13½	.13
.....	.04½	.04½	.04½	Hydrate, 500 lb bbls.....lb.	.04	.04½	.04½	.04½
.05½	.07½	.07½	.07½	Nitrate, 700 lb casks.....lb.	.07½	.08	.08	.07½
17.00	23.00	23.00	23.00	Barytes, Floated, 350 lb bbls wks.....ton	23.00	24.00	24.00	23.00
.....	.....	.....	.....	Bauxite, bulk, mines.....ton	5.00	8.00	8.00	5.00
.39	.40	.37	.39	Beeswax, Yellow, crude bags..lb.	.37	.38	.38	.37
.40	.46	.38	.43	Refined, cases.....lb.	.42	.43	.43	.42

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(Black Ash)

Sodium Sulphide
30°-32° Crystals

Iron Oxide
(Venetian Red)

Prices Current and Comment

Standard Purchasing Power of the Dollar: July 1914 $1.00 - Jan. 1927 68.7c - July 1927 71.7c - April 1928 67.8c

higher than at any time last year. Ammonium sulfate reached a high this season of $2.90 per 100 pounds at New York, which compares with $2.55 per 100 pounds, the highest price reached during 1927. In spite of the fact that a decline has already started, this commodity is now quoted at $2.70 per 100 pounds at both New York and Southern points, which is still considerably above the price reached last year.

Aniline Oil — While makers continue to openly quote 15c lb. in tanks, reports are heard of shading in some directions to a level somewhat under the price quoted. Interest centers primarily in contract withdrawals rather than on spot business.

Antimony — The metal market has improved steadily during the month, registering an advance of ½c lb. This is attributed to firm conditions in the primary market for the demand here is still somewhat quiet. Nevertheless, the market here is firm at the higher price of 10¼c lb. on spot with futures quoted at about the same figure. Coincident with these conditions in the metal market, the prices of oxide and powdered needle have advanced one cent lb. during the month, both being quoted at 11c lb.

Arsenic — Reports are heard of higher prices prevailing with the advent of the warmer weather, but dealers continue to quote 4c @ 4½c lb. for white and this figure can probably be shaded with a firm order. Consuming interest has not been very healthy during the month.

Barium Carbonate — Now that the price has been advanced to conform with the duty increase of $10.00 a ton domestic manufacturers are once more in a position to compete with imported goods. There has been quite a sizeable tonnage imported since the announcement of the additional duty and also some additional consuming inquiry. Importers name the market at $57.00 ton for spot goods, but an order of fair size could probably induce shading of this figure.

Barium Chloride — Strong competition between importers and American makers continues. Domestic sellers are asking $56.00 @ $57.00 ton and importers about $54.00 ton for spot goods. In some instances the former are meeting imported levels to get the business. Sales have been rather small for the month past.

Benzene — Sellers continue to experience a better demand and though there has not been any change in the price over the month, there is a firm tone to the market. Increased use in motor fuels as the season advances is expected to add further strength to the present market.

1914 July	1927 High	1927 Low	1927 Aver.		Current Market	1928 High	1928 Low
.47½	.58	.56	.57½	White, cases.....lb.	.56	.58	.58	.56
.....	.65	.65	.65	Benzaldehyde, technical, 945 lb drums wks.....lb.	.65	.70	.70	.65
.....	.23	.21	.22	Benzene, 90%, Commercial, 8000 gal tanks wks.....gal.	.21	.23	.23	.21
.....	.23	.21	.22½	CP, tanks works.....gal.	.21	.23	.23	.21
.....	.70	.70	.70	Benzidine Base, dry, 250 lb bbls.....lb.	.70	.74	.74	.70
.....	1.00	1.00	1.00	Benzoyl, Chloride, 500 lb drs..lb.	.....	1.00	1.00	1.00
.....	.....	.....	.....	Benzyl, Chloride, tech drs....lb.	.....	.25	.25	.25
.....	.24	.24	.24	Beta-Naphthol, 250 lb bbl wk.lb	.24	.26	.26	.24
.....	1.35	1.35	1.35	Naphthylamine, sublimed, 200 lb bbls.....lb.	.....	1.35	1.35	1.35
.....	.63	.63	.63	Tech, 200 lb bbls.....lb.	.63	.65	.65	.63
75.00	80.00	80.00	80.00	Blanc Fixe, 400 lb bbls wks...ton	80.00	90.00	90.00	80.00
1.20	2.25	2.00	2.23	Bleaching Powder, 300 lb drs c-1 wks contract....100 lb.	.....	2.25	2.25	2.25
.....	2.25	2.00	2.02	700 lb drs c-1 wks contract .....100 lb.	.....	2.00	2.00	2.00
3.00	3.75	4.75	4.47½	Blood, Dried, FOB, NY..Unit	.....	5.00	5.25	5.00
.....	.....	.....	.....	Chicago.....Unit	.....	4 75	5.00	4.75
.....	.....	.....	.....	S. American shipt.....Unit	.....	4.50	5.00	4.50
.27	.30	.28	.29	Blues, Bronze Chinese Milori Prussian Soluble.....lb.	.31	.35	.35	.31
28.50	38.00	29.00	29.04	Bone, raw, Chicago.....ton	29.00	30.00	30.00	29.00
.....	.06	.06	.06	Bone, Ash, 100 lb kegs.....lb.	.06	.07	.07	.06
.02½	.08½	.08½	.06	Black, 200 lb bbls.....lb.	.....	.08½	.08½	.08½
20.00	30.00	28.00	29.46	Meal, 3% & 50%, Imp....ton	.....	32.00	37.00	32.00
.04	.04½	.04½	.04½	Borax, crys, 500 lb bbls.....lb.	.03½	.04½	.05	.03½
.07	.11	.11	.11	Bordeaux, Mixture, 16% pwd.lb.	.11	.12	.12	.11
.03½	.08	.08	.08	Paste, bbls.....lb.	.08	.10	.10	.08
55.00	28.00	26.00	27.30	Brazilwood, sticks, shpmt.....lb.	26.00	28, 00	28.00	26.00
1918	.60	.60	.60	Bronze, Aluminum, powd blk.lb.	.60	1.20	1.20	.60
.....	.55	.55	.55	Gold, bulk.....lb.	.55	1.25	1.25	.55
.....	1.60	1.42	1.52	Butyl, Acetate, normal drs 1c-1 wks.....gal.	.....	1.45	1.60	1.60
.....	1.55	1.42	1.47½	Tank, drs wks.....gal.	.....	1.40	1.55	1.55
.....	1.00	1.00	1.00	Secondary, 50 gal drs.....gal.	1.00	1.05	1.05	1.00
.....	.70	.70	.70	Aldehyde, 50 gal drs wks...lb.	.....	.70	.70	.70
.....	.34	.34	.34	Propionate, drs.....lb.	.34	.36	.36	.34
.....	.60	.60	.60	Stearate, 50 gal drs.....lb.	.....	.60	.60	.60
.....	.57	.57	.57	Tartrate, drs.....lb.	.57	.60	.60	.57
1918	1.50	1.35	1.42	Cadmium, Sulfide, boxes.....lb.	1.35	2.00	2.00	1.35
				Calcium				
.....	3.50	3.50	3.50	Calcium, Acetate, 150 lb bags c-1.....100 lb.	.....	3.50	3.50	3.50
.....	.07½	.07½	.07½	Arsenate, 100 lb bbls c-1 wks.....lb.	.07	.08	.08	.07
.....	.05	.05	.05	Carbide, drs.....lb.	.05	.06	.06	.05
.....	1.00	1.00	1.00	Carbonate, tech, 100 lb bags c-1.....lb.	1.00	1.00	1.00	1.00
1918	27.00	27.00	27.00	Chloride, Flake, 375 lb drs c-1 wks.....ton	.....	25.00	27.00	25.00
12.00	21.00	21.00	21.00	Solid, 650 lb drs c-1 fob wks .....ton	20.00	22.00	23.00	20.00
.....	52.00	52.00	52.00	Nitrate, 220 lb bbls c-1 NY.ton	.....	52.00	52.00	52.00
.....	.09	.09	.09	Phosphate, tech, 450 lb bbls.lb.	.07	.08	.08	.07
.....	.....	.....	.....	Camwood, Bark, ground bbls.lb.	.....	.18	.18	.18
.22	.33	.33	.30½	Candelilla Wax, bags.....lb.	.....	.24	.28	.24
.....	.08	.08	.08	Carbon, Decolorizing, 40 lb bags c-1.....lb.	.08	.15	.15	.08
.....	.12	.12	.12	Black, 100-300 lb cases 1c-1 NY.....lb.	.....	.12	.12	.12
.06½	.05½	.05½	.05½	Bisulfide, 500 lb drs 1c-1 NY.....lb.	.05½	.06	.06	.05½
.....	.06	.06	.06	Dioxide, Liq, 20-25 lb cyl...lb.	.....	.06	.06	.06
.07½	.07	.07	.07	Tetrachloride, 1400 lb drs delivered.....lb.	.07	.07½	.07½	.07
.50	.50	.50	.50	Carnauba Wax, Flor, bags....lb	.....	.58	.58	.58
.....	.90	.54	.60½	No. 1 Yellow, bags.....lb.	.54	.55	.60	.54
.32	.37	.24	.31	No. 2 N Country, bags.....lb.	.36	.37	.38	.34
.42½	.68	.48	.56	No. 2 Regular, bags.....lb.	.51	.52	.56	.51
.....	.....	.....	.....	No. 3 N. C.....lb	.31	.32	.32	.31
.....	.....	.....	.....	No. 3 Chalky .....lb	.31	.32	.32	.31
.....	.18½	.15½	.17	Casein, Standard, ground.....lb.	.15	.15½	.18½	.15
.....	.34	.26	.32½	Celluloid, Scraps, Ivory cs....lb	.26	.30	.30	.26
.....	.18	.18	.18	Shell, cases.....lb.	.18	.20	.20	.18
.....	.34	.26	.32½	Transparent, cases.....lb.	.30	.32	.32	.30
.....	1.40	1.40	1.40	Cellulose, Acetate, 50 lb kegs..lb.	.....	1.40	1.40	1.40
.....	.03	.03	.03	Chalk, dropped, 175 lb bbls...lb.	.03	.03½	.03½	.03
.03	.02½	.02½	.02½	Precip, heavy, 560 lb cks...lb.	.....	.04½	.04½	.04½
.04	.04½	.04½	.04½	Light, 250 lb casks.....lb.	.02½	.03½	.03½	.02½
.....	.18	.18	.18	Charcoal, Hardwood, lump, bulk wks.....bu.	.18	.19	.19	.18
1918	.06	.06	.06	Willow, powd, 100 lb bbl wks.....lb.	.06	.06½	.06½	.06
.....	.04	.04	.04	Wood, powd, 100 lb bbls....lb.	.04	.05	.05	.04
.....	.03	.02½	.03	Chestnut, clarified bbls wks,..lb.	.02½	.03	.03	.02½
.04	.02	.01½	.02	25% tks wks.....lb.	.01½	.02	.02	.01½
.....	.05½	.05½	.05½	Powd, 60%, 100 lb bgs wks.lb.	.....	.04 4/5	.04 4/5	.04 4/5
.....	.06½	.06½	.06½	Powd, decolorized bgs wks..lb.	.05½	.06	.06	.05½
8.00	8.00	8.00	8.00	China Clay, lump, blk mines.ton	8.00	9.00	9.00	8.00
.....	.01½	.01½	.01½	Powdered, bbls.....lb.	.01½	.02	.02	.01½
.....	10.00	10.00	10.00	Pulverized, bbls wks.....ton	10.00	12.00	12.00	10.00
14.00	15.00	15.00	15.00	Imported, lump, bulk. ton	15.00	25.00	25.00	15.00
.....	.03	.03	.03	Powdered, bbls.....lb	.03	.03½	.03½	.03
1918	.08	.08	.08	Chlorine, cyls 1c-1 wks contract .....lb.	.08	.09	.09	.08
1917	.05½	.04	.04	Liq tank or multi-car lot cyls wks contract.....lb.	.....	.03½	.03½	.03½
1918	.07	.07	.07	Chlorobenzene, Mono, 100 lb. drs 1c-1 wks.....lb.	.....	.07	.07	.07
.19	..20	..20	..20	Chloroform, tech, 1000 lb drs..lb.	.20	.22	22	.20
.....	1.00	1.00	1.00	Chloropicrin, comml, cyls....lb.	1.00	1.35	1.35	1.00

News Notes

"Over a Century of Service and Progress"

Factories:
Niagara Falls, N. Y.
Murphysboro, Ill.
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INNIS, SPEIDEN & COMPANY
ESTABLISHED 1816
46 CLIFF STREET, NEW YORK

Branches:
Chicago
Boston
Philadelphia
Cleveland
Gloversville

1816 MAY, 1928 1928

CHEMICAL BUSINESS KEEPS UP WELL

Our business seems to be keeping up nicely, and we think the chemical and allied industries are enjoying a good demand for their products. The month of April has proven to be a very satisfactory one, and May has opened up with a good volume. Manufacturing conditions generally throughout the country are as good as might be expected at this season of the year, and while there has been some talk of a "let-up" in business generally, owing to the approach of the presidential election, we do not find that this has had any material effect, and we are hopeful that each month will continue to show an improvement over its predecessor. Some major as well as minor changes have taken place in the prices of some commodities.

Barium Carbonate—After considerable deliberation an increase in the duty of this product was recommended by the Tariff Commission, and a bill increasing the duty $10.00 per ton was signed by the President on March 26th, and this became effective 30 days later, or on April 25th. The duty is, therefore, $30.00 per ton instead of $20.00 per ton, and the import price increased by this amount, and the price for the domestic product has been correspondingly raised.

Citric Acid—The price was increased during April by a cent and one half per pound as was also **Tartaric Acid** by one cent per pound. The market for both of these items is very firm with an upward tendency, because of seasonal demand.

Formaldehyde U. S. P.—The price for this was reduced during April, one-half cent per pound, due to reductions in the price of alcohol.

Carbon Tetrachloride—Was also reduced one-half cent per pound.

Bichromate of Potash and Soda—These products came in for considerable attention during the early days of April because of sharp advances in prices, approximately one cent per pound.

We are advised that increases in the tariff may take place in the case of **Permanganate of Potash** and **Soda Silico Fluoride,** as both of these articles have been subject to some inquiry on the part of the tariff commission, and indications point to a possible increase in the tariff which would be reflected in the price of the commodities.

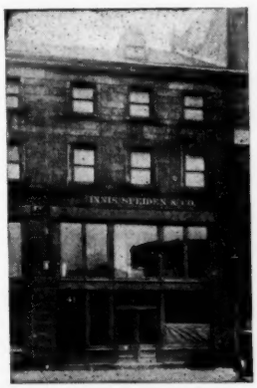
Naphthalene Flakes and Balls—Are in very active demand because of the seasonal requirements and prices are very firm. **Flakes** in carload lots bringing 5 to 5½c, **Balls** 1c per pound more.

Other seasonal chemicals such as **Arsenic, Arsenic Acid, Caustic Potash, Lead Arsenate,** etc. are firm in price with good inquiries.

We have plentiful stocks and solicit your inquiries and orders.

SEVENTY YEARS AGO
In 1858

After 42 years of serving American industry with chemicals and dyestuffs this Company was enjoying continued growth and was contributing to the expansion of the textile and other American industries.



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Branch Office and Warehouse
41-42 Commercial Wharf, Boston, Mass.
Centrally located for service to our Boston and other New England customers.
Spot stocks available quickly.

The utilization of Southern cotton in New England mills helped to provide clothing for the armies in the trying days of the Civil War, which was soon to throw the country into a state of turmoil.

George Innis and Howland Sherman were joint owners and managers of the Company at this time.

The reports of the Academie des Sciences for 1858 show how Pasteur recognized complex phenomena in alcoholic fermentation.

At an accidental meeting between Napoleon and Cavour in Plombieres in July, 1858, the Franco-Sardinian Alliance was made whereby France was to assist Sardinia in driving Austrians from Lombardy and Venetia.

Senator Seward of New York in April, 1858, said, that unless railroads and telegraphy connected the Pacific and Atlantic Coasts, the Pacific States could not be held in the Union. Senate debate followed regarding three possible routes for a railroad to the Pacific Coast. It was felt that "Every day that the construction of the railroad was delayed was a day of danger to the U. S. A."

The question of whether new territory should be slave holding or free was becoming a serious national question.

Napoleon III established civil government in Algeria after a successful conquest, as a result of demand by capital and the church for protection of Christians and French investments in Algeria.

In Januray, 1858—An unsuccessfu attempt was made by Orsini—an Italian fanatic—on the life of Napoleon III, Emperor of France. This precipitated activity by France against Italy.

Prices Current and Comment

Standard Purchasing Power of the Dollar: July 1914 $1.00 - Jan. 1927 68.7c - July 1927 71.7c - April 1928 67.8c

Bleaching Powder — The position of this market has not shown any change over the month past. Sellers are not experiencing any demand as the consuming industries have themselves been very quiet during the period under report. Market is at $2.00 @ $2.25 100 lbs. as to quantity.

Blood — Little interest and but few sales have been reported during the past month. Easy conditions exist in the market and prices have declined in both New York and Chicago markets. A price of $5.00 per unit is quoted in the former city, while in the latter the weakness is even more pronounced and $4.75 per unit is being quoted with no interest being shown.

Bone Meal — The decline in fertilizer prices has been reflected here and quotations are now at $32.00 per ton.

Borax — A regular volume of business was consummated during the month. At the quoted level of 3¾c lb. in large parcels the market was none too steady in some directions.

Calcium Acetate — Makers express themselves as satisfied with the volume of business passing and are holding the market at the quoted levels of $3.50 100 lbs. New York.

Calcium Arsenate — Manufacturers have maintained quoted price in anticipation of the movement in this commodity which should take place within the next two months.

Calcium Chloride — Sales are beginning to pick up in volume and there has not been any deviation of recent weeks from the schedule price of $20.00 ton for solid and $25.00 ton for flake. Indications at this writing are that sales will run well ahead of last year, based on the volume ordered by customers in comparison with 1927. Sales are contingent to a large extent on the weather and a hot dry Summer should develop a material increase in tonnage sold over that of last year.

Candelilla Wax — Has declined 1c lb. during the past month, now being quoted at 24c lb. with fair demand.

Carnauba Wax— Considerable activity has been evidenced here during the past month. Florentine is again available and is quoted at 58c lb. No. 2, N. C., No. 3 N. C. and No. 3 chalky have all advanced in the face of good demand, now being quoted at 36c @ 37c lb., 31c @ 32c lb. and 31c @ 32c lb. respectively. Other grades are unchanged.

Casein — The market has been easy and demand very slack during the month. Standard ground has declined in price, now being quoted at 15c @ 15½c lb.

1914	1927				Current	1928	
July	High	Low	Aver.		Market	High	Low
.17	.27	.26	.26¼	Chrome, Green, CP.....lb.	.26	.29	.26
.03½	.06½	.06½	.06½	Commercial.....lb.	.06½	.11	.11	.06½
.11	.17½	.16½	.16½	Yellow.....lb.	.15¼	.16¼	.17	.15½
				Chromium, Acetate, 8% Chrome				
.....	.05	.04½	.04½	bbls.....lb.	.04½	.05½	.05½	.04½
1918	.05½	.05½	.05½	20° soln, 400 lb bbls.....lb.	.....	.05½	.05½	.05½
.....	.27	.27	.27	Fluoride, powd, 400 lb bbl..lb.	.27	.28	.28	.27
.....	.34½	.34½	.34½	Oxide, green, bbls.....lb	.34½	.35½	.35½	.34½
.....	9.50	9.00	9.08	Coal tar, bbls.....bbl	9.00	9.50	9.50	9.00
1.00	2.10	2.10	2.10	Cobalt Oxide, black, bags....lb.	2.10	2.22	2.22	2.10
.48	.92	.77	.85½	Cochineal, gray or black bag..lb.	.84	.87	.87	.84
.42	.92	.77	.87½	Teneriffe silver, bags.....lb.	.....	.86	.86	.86
13.75	13.57½	12.90	12.97	Copper, metal, electrol...100 lb.	14.20	14.25	14.20	12.90
.13½	.16½	.16½	.16½	Carbonate, 400 lb bbls.....lb.	.16½	.17½	.17½	.16½
.....	.28	.28	.28	Chloride, 250 lb bbls.....lb.	.....	.28	.28	.28
.....	.48	.48	.48	Cyanide, 100 lb drs.....lb.	.48	.50	.50	.48
.....	.16½	.16½	.16½	Oxide, red, 100 lb bbls.....lb.	.16½	.17	.17	.16½
				Sub-acetate verdigris, 400 lb				
.28	.18	.17	.18	bbls.....lb.	.18	.19	.19	.18
4.00	5.00	4.75	4.91¼	Sulfate, bbls c-1 wks...100 lb.	5.15	5.85	5.15	5.05
				Copperas, crys & sugar bulk				
13.00	17.00	13.00	13.33½	c-1 wks.....ton	13.00	14.00	14.00	13.00
.....	1.25	1.25	1.25	Sugar, 100 lb bbls.....100 lb.	1.25	1.35	1.35	1.25
				Cotton, Soluble, wet, 100 lb				
.80	.40	.40	.40	bbls.....lb.	.40	.42	.42	.40
.....	42.00	20.00	33.75	Cottonseed, S.E. bulk c-1...ton	.....	.....	.....	.....
.....	42.00	20.00	29.85	Meal S.E. bulk.....ton	.....	.....	.....	.....
26.50	35.00	21.50	30.38	7% Amm., bags mills...ton	36.00	37.00	37.00	36.00
				Cream Tartar, USP, 300 lb.				
.23½	.27	.22	.24	bbls.....lb.	.26	.27½	.27½	.26
.53	.40	.40	.40	Creosote, USP, 42 lb cbys.....lb.	.40	.42	.42	.40
1918	.20	.20	.20	Oil, Natural, 50 gal drs....gal.	.17	.19	.19	.17
1918	.25	.25	.25	10-15% tar acid.....gal.	.21	.23	.23	.21
				25-30% tar acid.....gal.	.25	.28	.28	.25
1918	.17½	.17½	.17½	Cresol, USP, drums.....lb.	.17½	.20	.20	.17½
.07½	.17	.16	.16½	Cudbear, English.....lb.	.16	.17	.17	.16
.05	.18½	.15	.18	Cutch, Rangoon, 100 lb bales.lb.	.....	.18½	.18½	.18½
.....	.05	.05½	.05½	Borneo, Solid, 100 lb bale...lb.	.06	.07	.07	.06
				Cyanamide, bulk c-1 wks Amm.				
.....	1.82½	1.67½	1.78¾	.....lb.	.....	1.67½	1.67½	1.67½
.....	3.92	3.77	3.84½	Dextrin, corn, 140lb. bags 100 lb.	4.82	5.02	5.02	3.77
3.00	3.87	3.72	3.78¼	White, 130 lb bgs.....100 lb.	4.77	4.97	4.97	3.72
.05½	.08½	.08½	.08½	Potato, yellow, 220 lb bgs...lb.	.08	.09	.09	.08
.05½	.08½	.08½	.08½	White, 220 lb bags 1c-1....lb.	.08	.09	.09	.08
.....	.08½	.08	.08	Tapioca, 200 lb bags 1c-1...lb.	.08	.08½	.08½	.08
.....	3.80	3.80	3.80	Diaminophenol, 100 lb kegs...lb				
.....	2.95	2.85	2.93½	Diamylphthalate, drs wks...gal.	.....	3.80	3.80	3.80
.....	3.25	3.25	3.25	Dianisidine, 100 lb kegs.....lb.	2.85	2.90	2.90	2.85
.....	.31½	.29½	.30½	Dibutylphthalate, wks.....lb.	.....	.28	.28	.28
.....	.55	.55	.55	Dibutyltartrate, 50 gal drs....lb.	.29½	.31½	.31½	.29½
.....	.23	.23	.23	Dichloromethane, drs wks....lb.	.55	.65	.65	.55
.....	2.15	2.15	2.15	Diethylamine, 400 lb drs.....lb.	.23	.25	.25	.23
.....	1.85	1.85	1.85	Diethyl carbonate, drs.....gal.	.....	2.15	2.15	2.15
1918	.55	.55	.55	Diethylaniline, 850 lb drs.....lb.	1.85	2.00	2.00	1.85
.....	.20	.20	.20	Diethyleneglycol, drs.....lb.	.55	.60	.60	.55
.....	.....	.....	.....	Mono ethyl ether, drs....lb	.10	.12	.12	.10
.....	.....	.....	.....	Mono butyl ether, drs....lb.	.25	.35	.35	.25
.....	.64	.64	.64	Diethylorthotoluidin, drs.....lb.	.64	.67	.67	.64
				Diethyl phthalate, 1000 lb				
.....	.25	.25	.25	drums.....lb.	.24	.26	.26	.24
				Diethylsulfate, technical, 50 gal				
.....	.30	.20	.25	drums.....lb.	.30	.35	.35	.30
.....	2.60	2.60	2.60	Dimethylamine, 400 lb drs....lb.	.....	2.62	2.62	2.62
1918	.32	.30	.31½	Dimethylaniline, 340 lb drs...lb	.30	.32	.32	.30
.....	.45	.45	.45	Dimethylsulfate, 100 lb drs...lb.	.45	.50	.50	.45
1918	.15½	.15	.15½	Dinitrobenzene, 400 lb bbls...lb.	.15½	.16½	.16½	.15½
.....	.18	.18	.18	Dinitrochlorine, 300 lb bbl....lb.	.18	.19	.19	.18
				Dinitrochlorobenzene, 400 lb.				
1918	.15	.15	.15	bbls.....lb.	.15	.16	.16	.15
				Dinitronaphthalene, 350 lb bbls				
1917	.32	.32	.32	.....lb.	.32	.34	.34	.32
1918	.31	.31	.31	Dinitrophenol, 350 lb bbls....lb.	.31	.32	.32	.31
1918	.18	.15	.17½	Dinitrotoluene, 300 lb bbls....lb.	.18	.19	.19	.18
				Diorthotolyguanidine, 275 lb				
.....	1.05	.85	.88	bbls wks.....lb.	.48	.49	.90	.48
1918	.48	.45	.45½	Diphenylamine.....lb.	.45	.47	.47	.45
.....	.....	.....	.....	Diphenylguanidine, 100 lb bbl.lb.	.40	.41	.72	.40
.....	.26	.26	.26	Dip Oil, 25%, drums.....lb.	.26	.30	.30	.26
45.00	49.00	41.00	45.25	Divi Divi pods, bgs shipmt...ton	.61	62.00	62.00	60.00
.02½	.04	.04	.04	Extract.....lb.	.05	.05½	.05½	.05
1918	.84	.72	.67½	Egg Yolk, 200 lb cases.....lb.	.74	.75	.77	.73
				Epsom Salt, tech, 300 lb bbls				
1.00	2.00	1.75	1.87½	c-1 NY.....100 lb.	1.70	1.75	1.75	1.70
.22	.45	.37	.43	Esther, USP, 1880, 50 lb drs..lb.	.37	.38	.38	.37
				Ethyl Acetate, 85% Ester, 110				
.....	.90	.90	.90	gal drs.....gal.	.....	.75	.80	.75
.....	1.10	1.03	1.08	99%, gal drums.....gal.	.....	1.10	1.10	1.10
.....	1.05	1.05	1.05	Benzylaniline, 300 lb drs...lb.	1.05	1.11	1.11	1.05
.....	.50	.50	.50	Bromide, tech, drums.....lb.	.....	.70	.70	.70
.....	.22	.22	.22	Chloride, 200 lb. drums....lb.	.....	.22	.22	.22
.....	3.50	3.50	3.50	Lactate, drums works.....lb.	.30	.35	3.50	3.50
1918	.30	.30	.30	Methyl Ketone, 50 gal drs..lb.	.....	.30	.30	.30
.....	.45	.45	.45	Oxalate, drums works.....lb.	.45	.55	.55	.45
.....	.....	.....	.....	Oxybutyrate, 50 gal drs. wks. lb.	.30	.36	.36	.30
.....	.70	.70	.70	Ethylene Bromide, 600 lb dr..lb.	.....	.70	.70	.70
				Chlorhydrin, anhydrous, 50 gal				
.....	.75	.75	.75	drums.....lb.	.75	.85	.85	.75
.....	.15	.11	.11½	Dichloride, 50 gal drums...lb.	.07	.10	.11	.07
.....	.30	.30	.30	Glycol, 50 gal drs wks.....lb.	.27	.30	.40	.25
.....	.....	.....	.....	Mono Butyl Ether drs. wks.	.27	.31	.27	.31
.....	.....	.....	.....	Mono Ethyl Ether drs. wks.	.20	.24	.20	.24
				Mono Ethyl Ether Acetate				
.....	.....	.....	.....	dr. wks.	.23	.26	.23	26.
1918	.62	.62	.62	Ethylidenaniline.....lb.	.62	.65	.65	.62
8.00	20.00	20.00	20.00	Feldspar, bulk.....ton	20.00	25.00	25.00	20.00
.....	15.00	15.00	15.00	Powdered, bulk works.....ton	15.00	21.00	21.00	15.00
				Ferric Chloride, tech, crystal				
.....	.07½	.07½	.07½	475 lb bbls.....lb.	..07½	.09	.09	.07½

DU PONT
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ORGANIC CHEMICALS
for
Industrial Purposes

DYESTUFF INTERMEDIATES—After more than ten years experience in the manufacture of Intermediates and Dyestuffs we have accumulated a fund of knowledge and technical skill that enables us to guarantee our products to conform with your most exacting quality standards. Our own large consumption requirements of these products is your assurance of uniformity of product and constant availability of stocks.

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RUBBER ACCELERATORS—Realizing that no single accelerator is suitable for every rubber compound or adaptable to all manufacturing processes, we have developed and offer a wide variety of organic accelerators that enable us to recommend a product for practically every type of rubber compound and condition of cure. We also maintain a service laboratory to furnish technical assistance on any rubber compounding or manufacturing problem.

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RUBBER COLORS—The establishment of a synthetic dyestuffs industry in the United States is probably the greatest achievement in the post-war development of chemical manufacture. Among the hundreds of organic dyestuffs we manufacture is a complete range of colors for rubber that satisfy nearly every specific need of the manufacturer of colored articles.

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569 Mission St.

Prices Current and Comment

Standard Purchasing Power of the Dollar: July 1914 $1.00 - Jan. 1927 68.7c - July 1927 71.7c - April 1928 67.8c

Chlorine, Liquid — While the total value of sales to date for the year are not ahead of 1927 the volume sold is somewhat in excess of last year. Not much spot business is reported but consumers are ordering out against contract up to the volume expected by sellers. The schedule price of 3½c lb. in tanks at the works is being adhered to.

Chrome Yellow — Keen competition has lead to considerable price cutting during the month so that quoted figures are now 1¼c lb. lower than when last reported. Quotations in the open market are at 15¼c @ 16¼c lb., with some large competitive business going as low as 15c lb.

Copper Sulfate — Facing the two best months of the year—May and June—the market is in a very firm position. Sellers are booking orders for a limited period ahead at $5.15 100 lbs. for carlot quantities and ranging to $5.85 100 lbs. according to quantity. Imported costs are still too high to enable competition on this market and while sellers have sufficient stocks to care for ordinary requirements there is certainly not an oversupply. Buying from the Pennsylvania and Long Island trade is now quite apparent and other sections are expected to follow shortly. An order for export to Japan was on this market last week indicating a shortage in that section of the World also.

Dextrin — Prevailing strength and high prices in the grain market have lead to further advances in corn dextrin. This commodity is now 15c per 100 pounds higher than when last reported, which makes a total advance of $1.05 per 100 pounds over prices prevailing at the first of the year. Canary is now quoted at $4.82 @ $5.02 per 100 lbs. and white at $4.77 @ $4.97 per 100 lbs. in a strong market. Potato and tapioca dextrins remain unchanged at quoted figures.

Diorthotolyguanidine — With the announcement of the Supreme Court decision on the diphenylguanidine patent suit since our last issue and the subsequent opening of the market to competition, the price on this item has been sharply cut by this competition to 48c @ 48c lb. in all directions.

Diphenylguanidine—As with diorthotolyguanidine the Supreme Court decision invalidating the diphenyguanidine, patent precipitated the price downward and it is quoted to-day at 40c @ 41c lb. based on the competition among manufacturers for what consuming business there is in evidence.

1914 July	1927 High	1927 Low	1927 Aver.		Current Market		1928 High	1928 Low
2.80	5.60	4.15	4.69	Fish Scrap, dried, wks.....unit	.....	Nom.	Nom.	Nom.
2.50	3.50	4.24	3.56½	Acid, Bulk 7 & 3½% delivered Norfolk & Balt. basis...unit	.....	Nom.	Nom.	Nom.
.08	.14	.12½	.13½	Flake, White, bbls.....lb.	.....	Nom.	Nom.	Nom.
.40	1.10	.90	1.01½	Flavine, lemon, 55 lb cases...lb.	1.10	1.15	1.15	1.10
.40	1.10	.85	.89	Orange, 70 lb cases.....lb.	1.10	1.15	1.15	1.10
.....				Flavseed.....lb.				
.....	25.00	25.00	25.00	Fluorspar, 95%, 220 lb bags...lb.	.....	.....	.....	.....
.....	.....	.....	.....	Ex-dock.....ton	.....	.....	.....	.....
				Formaldehyde, aniline, 100 lb. drums.....lb.	.....	25.00	25.00	25.00
.....	.39	.39	.39		.39	.42	.42	.39
.08½	.11½	.08½	.10	USP, 400 lb bbls lc-1 wks...lb.	.08½	.09	.09	.08½
.....	.02½	.02½	.02½	Fossil Flour.....lb.	.02½	.04	.04	.02½
.....	15.00	15.00	15.00	Fullers Earth, bulk, mines...ton	15.00	20.00	20.00	15.00
.....	25 00	25.00	25.00	Imp, powd c-1 bags.....ton	25.00	30.00	30.00	25.00
.....	.17½	.17½	.17½	Furfural, 500 lb drums.....lb.	.17½	.19½	.19½	.17½
1.10	1.69	1.35	1.59	Fusel Oil, 10% impurities....gal.	.....	1.35	1.35	1.35
.01½	.04	.04	.04	Fustic, chips.....lb.	.04	.05	.05	.04
.....	.20	.20	.20	Crystals, 100 lb boxes.....lb	.20	.22	.22	.20
.06	.09	.09	.09	Liquid, 50°, 600 lb bbls....lb.	.09	.10	.10	.09
.08	.20	.20	.20	Solid, 50 lb boxes.....lb.	.20	.23	.23	.20
12.00	30.00	30.00	30.00	Sticks.....ton	30.00	32.00	32.00	30.00
1918	.50	.50	.50	G Salt paste, 360 lb bbls.....lb.	.50	.52	.52	.50
.12	.20	.20	.20	Gall Extract.....lb.	.20	.21	.21	.20
.04½	.08	.06	.....	Gambier, common 200 lb cs...lb.	.08	.09	.09	.08
1917	.12	.12	.12	25% liquid, 450 lb bbls....lb.	.12	.14	.14	.12
.05½	.23	.11	.17	Singapore cubes, 150 lb bg..lb.	.11	.12	.12	.11
.....	.45	.30	.43½	Gelatin, tech, 100 lb cases....lb.	.45	.50	.50	45
.....	3.14	3.14	3.14	Bags, c-1 NY.....100 lb.	3.14	3.24	3.24	3.14
.60	1.05	1.05	1.05	Glauber's Salt, tech, 250 lb bags c-1 wks.....100 lb.	.75	1.05	1.05	.75
.....	3.24	3.24	3.24	Glucose (grape sugar) dry 70-80° bags c-1 NY....100 lb.	3.24	3.34	3.34	3.24
.....	3.14	3.14	3.14	Tanner's Special, 100 lb bags .....100 lb.	.....	3.14	3.14	3.14
.12	.20	.20	.20	Glue, medium white, bbls....lb.	.20	.24	.24	.20
.18	.22	.22	.22	Pure white, bbls.....lb.	.22	.26	.26	.22
.19½	.29	.22	.24	Glycerin, CP, 550 lb drs.....lb.	.15½	.15½	.19	.15½
.19½	.25	.17	.21½	Dynamite, 100 lb drs.....lb.	.11½	.12	.15	.11½
.....	.....	.....	.....	Saponification, tanks.....lb.	.08½	.08½	.10½	.08½
.....	.....	.....	.....	Soap Lye, tanks.....lb.	.07½	.07½	.09½	.07½
.....	15.00	15.00	15.00	Graphite, crude, 220 lb bgs..ton	15.00	35.00	35.00	15.00
.....	.05	.05	.05	Flake, 500 lb bbls.....lb.	.06	.09	.09	.06
				Gums				
				Gum Accroides, Red, coarse and				
.....	.03¾	.03¾	.03¾	fine 140-150 lb bags....lb.	.03¾	.04½	.04½	.03¾
.....	.06	.06	.06	Powd, 150 lb bags.....lb.	.06	.06½	.06½	.06
.....	.18	.18	.18	Yellow, 150-200 lb bags..lb.	.18	.20	.20	.18
.25	.40	.35	.39	Animi (Zanzibar) bean & pea 250 lb cases.....lb.	.35	.40	.40	.35
.....	.60	.50	.57½	Glassy, 250 lb cases.....lb.	.50	.55	.55	.50
.05	.09	.09	.09	Asphaltum ,Barbadoes (Manjak) 200 lb bags..lb	.09	.12	.12	.09
.15	.15	.15	.15	Egyptian, 200 lb cases.....lb.	.15	.17	.17	.15
36.00	55.00	55.00	55.00	Gilsonite Selects, 200 lb bags .....ton	58.00	65.00	65.00	55.00
.17½	.26½	.26½	.25	Damar Batavia standard 136, lb cases.....lb.	.23	.23½	.23½	.23
.....	.10½	.07	.10	Batavia Dust, 160 lb bags..lb.	.10½	.11	.11	.10½
.....	.18½	.17½	.18½	E Seeds, 136 lb cases....lb.	.17	.17½	.17½	.17
.....	.14	.09	.13	F Splinters, 136 lb cases and bags.....lb.	.14	.14½	.14½	.14
.....	.34	.33½	.34	Singapore, No. 1, 224 lb caseslb.	.30	.30½	.30½	.30
.14	.22½	.21	.22½	No. 2, 224 lb cases.....lb.	.22	.23	.23	.20
.08	.14	.11	.12	No. 3, 180 lb bags.....lb.	.14	.15	.15	.14
.34	.35	.30	.30	Benzoin Sumatra, technical, 120 lb cases.....lb.	.33	.35	.35	.33
.....	.14	.12	.13	Copal Congo, 112 lb bags, clean opaque.....lb.	.14	.15	.15	.14
.12	.08½	.08½	.08½	Dark, amber.....lb.	.08½	.09	.09	.08½
.18	.12½	.12½	.12½	Light, amber.....lb	.12½	.14	.14	.12½
.25	.35	.35	.35	Water white.....lb	.35	.36	.36	.35
				Mastic .....lb.	.58	.60	.60	.58
.15	.16	.16	.16	Manila, 180-190 lb baskets Loba A.....lb.	.16	.16½	.16½	.16
.....	.15	.15	.15	Loba B.....lb.	.15	.15½	.15½	.15
.....	.14½	.13	.13½	Loba C.....lb.	.13	.13½	.13½	.13
.....	.16	.16	.16	Pale bold, 224 lb cs.....lb.	.16	.18	.18	.16
.08½	.14	.12	.13	Pale nubs.....lb	.12	.12½	.12½	.12
.....	.07½	.07½	.07½	East Indies chips, 180lb bagslb.	.08	.08½	.08½	.07½
.....	.....	.....	.....	Pale bold, 180 lb bags.. .lb.	.17	.17½	.17½	.17
.....	.17	.17	.17	Pale nubs.....lb.	.14	.14½	.14½	.14
.....	.....	.....	.....	Pontianak, 224 lb cases....lb.				
.13½	.29	.25	.26½	Pale bold gen No. 1.....lb.	.25	.25½	.25½	.25
.07	.19	.13	.15½	Pale gen chips spot.....lb.	.13	.14½	.14½	.13
.....	.14	.13	.13½	Elemi, No. 1, 80-85 lb cs...lb.	.13½	.14	.14	.13
.....	.13	.12	.12½	No. 2, 80-85 lb cases.....lb.	.13	.13½	.13½	.13
.....	.13	.11	.11	No. 3, 80-85 lb cases.....lb.	.12	.13	.13	.12
.50	.67½	.57	.63½	Kauri, 224-226 lb cases No. 1 .....lb.	.50	.57	.57	.50
.32	.44½	.38	.41	No. 2 fair pale.....lb.	.35	.38	.38	.35
.07½	.14½	.10	.12	Brown Chips, 224-226 lb cases.....lb.	.10	.12	.12	.10
.....	.42	.38	.40	Bush Chips, 224-226 lb cases.....lb.	.38	.40	.40	.38
.....	.31½	.24½	.25	Pale Chips, 224-226 lb cases .....lb.	.24½	.26	.26	.24½
.19	.27	.25	.25	Sandarac, prime quality, 200 lb bags & 300 lb casks...lb.	.26	.27	.27	.26
1917	.12	.12	.12	Hematine crystals, 400 lb bbls.lb.	.17	.20	.20	.17
1917	.09	.09	.09	Paste, 500 bbls.....lb	.....	.11	.11	.11
.02¾	.03½	.03½	.03½	Hemlock 25%, 600 lb bbls wks lb.	.03½	.03¾	.03¾	.03½
.....	16.00	16.00	16.00	Bark.....ton	.....	16.00	16.00	16.00
.....	.60	.45	.56	Hexalene, 50 gal drs wks.....lb.	.....	.60	.60	.60
.....	.80	.62	.72	Hexamethylenetetramine, drs.lb.	.62	.65	.65	.62
2.60	3.35	2.75	3.08	Hoof Meal, fob Chicago.....unit	.....	.....	.....	.....

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PHTHALIC ANHYDRIDE

FOR over ten years, buyers have been accustomed to using PHTHALIC ANHYDRIDE of the highest purity by specifying "SELDEN BRAND".

Not only does "SELDEN BRAND" assure them of a product of highest purity, but it gives them PHTHALIC ANHYDRIDE in the form of natural long needle crystals --- the form which dissolves and melts most readily.

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DIBUTYL PHTHALATE
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EOSINE
ERYTHROSINE
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SELDEN BRAND PHTHALIC ANHYDRIDE reaches you in a new slack paper-lined barrel, containing 150 lbs. net weight, and the package is so constructed that it can be used for re-shipment.

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The SELDEN Company

PITTSBURGH, PA. U. S. A.

Prices Current and Comment

Standard Purchasing Power of the Dollar: July 1914 $1.00 - Jan. 1927 68.7c - July 1927 71.7c - April 1928 67.8c

Divi-Divi — The price has advanced $1 @ $2 per ton during the month and fair sales are reported at the higher prices of $61.00 @ $62.00 per ton.

Egg Yolk — The spot market has become somewhat firmer during the month with slight price advances. Spray yolk is now quoted at 74c @ 75c lb.

Ethyl Acetate — Sellers have advanced the inside price and now ask 76c gal. for 85% material and $1.00 gal. for 99%. Sales have been in good volume at this new level and the market is well held at the schedule.

Formaldehyde — Has not changed over the month and in spite of reported competition the market is steady but thoroughly routine in all directions at 8c @ 8¼c lb. for U. S. P.

Glauber Salts — The market both here and in New England is still weak and a buyers' market prevails. Quotations are heard from 75c to $1.00 100 lbs. according to position and sellers views. Even the first named low level does not induce any particular buying interest.

Glycerin — Business has been placed during the past few weeks at 11½c lb. for dynamite grade, April -May delivery. In some instances this has caused and advance in sellers ideas an a consequent price increase to 12c lb. The market is by no means strong and stocks of crude are plentiful in original hands. Saponification is quiet and neglected at 8¼c lb. and lye has the same status at 7⅜c lb. C. P. is nominal and fairly steady at 15c lb. Prospects of better conditions seem dubious at present with one of the largest consumers of dynamite glycerine rapidly completing arrangements to produce their own glycerin from molasses mash. Also competition from other products both in the dynamite and anti-freeze fields do not add to the prospects of an early recovery in glycerin.

Gums — Activity is reported as being quiet during the past month with, however, no changes in price.

Japan Wax — Activity has been good, but a high degree of competition has lead to ½c lb. reduction in price since last reported. Is now quoted at 17½c @ 18c. lb.

Lead Arsenate — Demand has started for this commodity and fair movement is already reported. Prices are unchanged at 13c @ 15c lb.

Lime-Sulfur Solution — Although the season is about over and demand has practically ceased, prices are unchanged at 15c @ 17c gal.

1914 July	1927 High	1927 Low	1927 Aver.		Current Market		1928 High	1928 Low
.....	3.90	3.00	3.57	South Amer. to arrive....unit	.....	.....	.....	.....
.....	.30	.22	.24	Hydrogen Peroxide, 100 vol, 140 lb cbys.....lb.	.24	.26	.26	.24
1917	.12	.12	.12	Hpyernic, 51°, 600 lb bbls....lb.	.12	.15	.15	.12
.58	1.28	1.20	1.27	Indigo Madras, bbls.....lb.	1.28	1.30	1.30	1.28
.....	.14	.14	.14	20% paste, drums.....lb.	.14	.15	.15	.14
.....	.07½	.07½	.07½	Solid, powder.....lb.	.07½	.08	.08	.07½
				Iron Chloride, see Ferric or Ferrous				
.04	.09	.09	.09	Iron Nitrate, kegs.....lb.	.09	.10	.10	.09
1.12½	2.50	2.50	2.50	Coml, bbls.....100 lb.	2.50	3.25	3.25	2.50
.....	.10	.10	.10	Oxide, English.....lb.	.10	.12	.12	.10
.....	.02½	.02½	.02½	Red, Spanish.....lb.	.02½	.03½	.03½	.02½
.....	.85	.85	.85	Isopropyl Acetate, 50 gal drs. gal.	.85	.90	.90	.85
.11½	.29	.17	.19	Japan Wax, 224 lb cases.....lb.	.17½	.18	.19	.17½
.....	60.00	60.00	60.00	Kieselguhr, 95 lb bgs NY....ton	60.00	70.00	70.00	60.00
.....	14.00	13.00	13.33	Lead Acetate, bbls wks...100 lb.				
9.12½	14.00	13.00	13.33	White crystals, 500 lb bbls wks.....100 lb.	13.00	13.50	13.50	13.00
.04½	.15½	.13½	.13	Arsenate, bbls 1c-1 wks.....lb.	.13	.15	.15	.13
3.90	7.80	6.20	6.78	Metal, c-1 NY.....100 lb.	.....	6.10	6.25	6.25
.07½	.14	.14	.14	Nitrate, 500 lb bbls wks....lb.	.....	.14	.14	.14
.17½	.17½	.17½	.17½	Oleate, bbls.....lb.	.17½	.18	.18	.17½
.....	.10½	.08½	.09	Oxide Litharge, 500 lb bbls..lb.	.....	.08½	.08½	.08½
.05½	.11½	.09½	.10	Red, 500 lb bbls wks....lb.	.....	.09½	.09½	09½
.05½	.09½	.09	.09½	White, 500 lb bbls wks...lb.	.....	.09	.09	.09
.05	.09	.08½	.08½	Sulfate, 500 lb bbls wk...lb.	.....	.08½	.08½	.08½
.....	4.50	4.50	4.50	Lime, ground stone bags....ton	.....	4.50	4.50	4.50
.....	1.05	1 05	1.05	Live, 325 lb bbls wks..100 lb.	.....	1.05	1.05	1.05
				Lime Salts, see Calcium Salts				
1918	.15	.15	.15	Lime-Sulfur soln bbls.....gal.	.15	.17	.17	.15
.03½	.06½	.06½	.06½	Lithopone, 400 lb bbls 1c-1 wks .....lb.	.....	.06½	.06½	.06½
.05	.08½	.08½	.08½	Logwood, 51°, 600 lb bbls.....lb.	.08½	.08½	.08½	.08½
.01½	.03	.03	.03	Chips, 150 lb bags.....lb.	.03	.03½	.03½	.03
.06	.12	.12	.12	Solid, 50 lb boxes.....lb.	.....	.12½	.12½	.12½
15.00	26.00	26.00	26.00	Sticks.....ton	26.00	27.00	27.00	26.00
.....	.07½	.07½	.07½	Lower grades.....lb.	.07½	.08	.08	.07½
.12	.30	.30	.30	Madder, Dutch.....lb.‡	.....	.30	.30	.30
30.00	48.00	48 00	48.00	Magnesite, calc, 500 lb bbl..ton	48.00	50.00	50.00	48.00

Magnesium

1918	.06½	.06	.06	Magnesium Carb, tech, 70 lb bags NY.....lb.	.06	.06½	.06½	.06
.....	37.00	37.00	37.00	Chloride flake, 375 lb drs c-1 wks.....ton	.....	37.00	37.00	37.00
.....	33.00	33.00	33.00	Imported shipment...ton	.....	33.00	33.00	33.00
.....	31.00	31.00	31.00	Fused, imp, 900 lb bbls NY ton	.....	31.00	31.00	31.00
.....	.10	.10	.10	Fluosilicate, crys, 400 lb bbls wks.....lb.	.10	.10½	.10½	.10
.....	.42	.42	.42	Oxide, USP, light, 100 lb bbls .....lb.	.....	.42	.42	.42
.....	.50	.50	50	Heavy, 250 lb bbls.....lb.	.....	.50	.50	.50
.....	.12½	.09½	.11½	Silicofluoride, bbls.....lb.	.09½	.10½	.10½	.09½
.....	.23	.23	.23	Stearate, bbls.....lb.	.23	.25	.25	.23
.20	.24	.24	.24	Manganese Borate, 30%, 200 lb bbls.....lb.	.....	.24	.24	.24
.06	.08	.08	.08	Chloride, 600 lb casks.....lb.	.08	.08½	.08½	.08
.....	.05	.04½	.04¾	Dioxide, tech (peroxide) drs.lb.				
				Ore, powdered or granular	.35	.40	.50	.35
.....	.03	.03	.03	75-80%, bbls.....lb.	.03	.03½	.03½	.03
.....	.04	.04	.04	80-85%, bbls.....lb.	.04	.04½	.04½	.04
.....	.05	.05	.05	85-88%, bbls.....lb.	.05	.05½	.05½	.05
.....	.07	.07	.07	Sulfate, 550 lb drs NY.....lb.	.07	.07½	.07½	.07
.....	.03½	.03½	.03½	Mangrove 55%, 400 lb bbls...lb.	.03½	Nom.	Nom.	.03½
.....	39.00	34.00	37.54	Bark, African.....ton	45.00	45.00	45.00	40.00
8.00	10.00	10.00	10.00	Marble Flour, bulk.....ton	10.00	12.00	12.00	10.00
1916	129.00	99.00	119.09	Mercury metal.....75 lb flask	123.00	125.00	127.50	121.00
1918	.72	.72	.72	Meta-nitro-aniline .....lb.	.72	.74	.74	.72
1918	1.70	1.70	1.70	Meta-nitro-para-toluidine 200 lb bbls.....lb.	1.70	1.80	1.80	1.70
1918	.90	.90	.90	Meta-phenylene-diamine 300 lb bbls.....lb.	.90	.94	.94	.90
1918	.72	.72	.72	Meta-toluene-diamine, 300 lb bbls.....lb.	.72	.74	.74	.72
.4	.....	.....	.....	Methanol, (Wood Alcohol), drs				
.45	.80	.55	.69	95%.....gal.	.46	.50	.55	.46
.50	.87	.57	.74½	97%, drums 1c-1.....gal.	.47	.50	.57	.47
.....	.....	.....	.....	Pure, drums 1c-1.....gal.	.46½	.48	.58	.46½
.....	.....	.....	.....	Synthetic, drums 1c-1.....gal.	.48	.50	58	.48
.....	.80	.75	.78	Denat. grd. tanks.....gal.	.45	.47	.75	.45
.....	.95	.95	.95	Methyl Acetate, drums.....gal.	.....	.95	.95	.95
.....	.88	.75	.66	Acetone, 100 gal drums...gal.	.75	.80	.80	.75
.....	1.00	.85	.92½	Anthraquinone, kegs.....lb.	.85	.95	.95	.85
.....	.55	.55	.55	Chloride, 90 lb cyl.....gal.	.55	.60	.60	.55
.....	.03½	.03½	.03½	Mica, dry grd. bags wks.....lb.	65.00	80.00	80.00	65.00
.....	.05½	.05½	.05½	Wet, ground, bags wks.....lb.	110.00	115.00	115.00	110.00
.....	3.00	3.00	3.00	Michler's Ketone, kegs.....lb.	....	3.00	....	....
.....	.70	.70	.70	Monochlorobenzene, drums see, Chlorobenzene, mono.....lb. Monoethylorthotoluidin, drs..lb.	.70	.75	.75	.70
1918	1.05	1.05	1.05	Monomethylaniline, 900 lb dr .....lb.	.....	1.05	1.05	1.05
.....	3.95	3.95	3.95	Monomethylparaminosulfate 100 lb drums.....lb.	3.95	4.20	4.20	3.95
.06½	.06½	.06½	.06½	Montan Wax, crude, bags....lb.	.06½	.07	.07	.06½
.....	.04	.04	.04	Myrobalans 25%, liq bbls.....lb.	.04½	.04½	.04½	.04½
.....	.08	.08	.08	50% Solid, 50 lb boxes.....lb.	.08	.08½	.08½	.08
27.00	43.50	41.00	42.00	J 1 bags.....ton	44.00	45.50	50.00	42.50
27.00	37.00	23.50	35.24	J 2 bags.....ton	.....	36.00	40.00	34.50
27.00	37.00	30.00	36.62	R 2 bags.....ton	.....	36.00	40.00	34.50
.10	.21	.18	.19½	Naphtha, v. m. & p. (deodorized) bbls.....gal.	.....	.18	.18	.18

A New Synthetic Lacquer Solvent

AERO BRAND ETHYL OXYBUTYRATE

An *entirely new* Lacquer Solvent—*Ethyl Oxybutyrate*—possessing distinctive properties and advantages, has been developed by the Research Laboratories of the American Cyanamid Company. Like Aero Brand Ethyl Lactate, it is manufactured synthetically at low cost, by a process involving the Company's air nitrogen raw materials.

Ethyl Oxybutyrate is two to two and a half times stronger solvent for nitrocellulose than other commonly used esters, measured by the usual type of hydrocarbon diluents. It is likewise an excellent solvent for cellulose acetate, ranking with acetone in this respect.

It is high-boiling, stable, and resistant to hydrolysis. Lacquers formulated with this solvent have additional flow and gloss. It is an effective retardant to "blushing" in humid weather.

Ethyl Oxybutyrate makes possible substantial savings in lacquer production costs. Decidedly worth investigating.

Chemical and Physical Properties:

Boiling Point, 144°/146°C.
Specific Gravity, .978/ .986 @ 20°C.
Color, Water-white.
Odor, Mild, pleasing odor, but no residual odor after drying.

The following Aero Brand Products have special application in the Lacquer and Paint Industries:

Ethyl Lactate (Solvent)
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Hydrocyanic Acid, Liquid
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Yellow Prussiate of Potash
Yellow Prussiate of Soda
Zinc Dust

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AMERICAN CYANAMID COMPANY

535 Fifth Avenue : New York

Prices Current and Comment

Standard Purchasing Power of the Dollar: July 1914 $1.00 - Jan. 1927 68.7c - July 1927 71.7c - April 1928 67.8c

Mercury — Conditions on this market are of a most routine nature. The market is held fairly firm at $123.00 flask and ranging to $125.00 flask according to seller and quantity. Sales during the month of April were very small. Although the market is held very firm in Europe, stocks there are known to be plentiful and if a better demand does not set in, not only here but in all parts of the World, a decrease in price is quite probable.

Methanol — Sellers are not doing a very extensive spot business and the market is generally characterized as soft. Consumers do not seem to be showing any interest in buying and what business there is, is of a routine nature. Denatured is quoted at 45c gal. in less carlot, drum parcels, and is none too firm at that level. Put in tanks if quoted at 42½c gal. 95% is offered at 46c gal. in drums and 97% at 48c gal in drums.

Methyl Acetone — Producers are holding to the quote level of 75c gal. where possible, though the market is not very steady at this level. Any sizeable order would induce a shading of this figure. Business during the past month has been routine.

Myrobalans — Increased difficulty in procuring supplies has lead to further price advances during the month. J1 is now quoted at $44.00 @ $45.00 per ton, while J2 and R2 are at $36.00 per ton.

Nitrogenous Material — Has declined along with other fertilizers as the season closes. Is now quoted at $3.50 per unit.

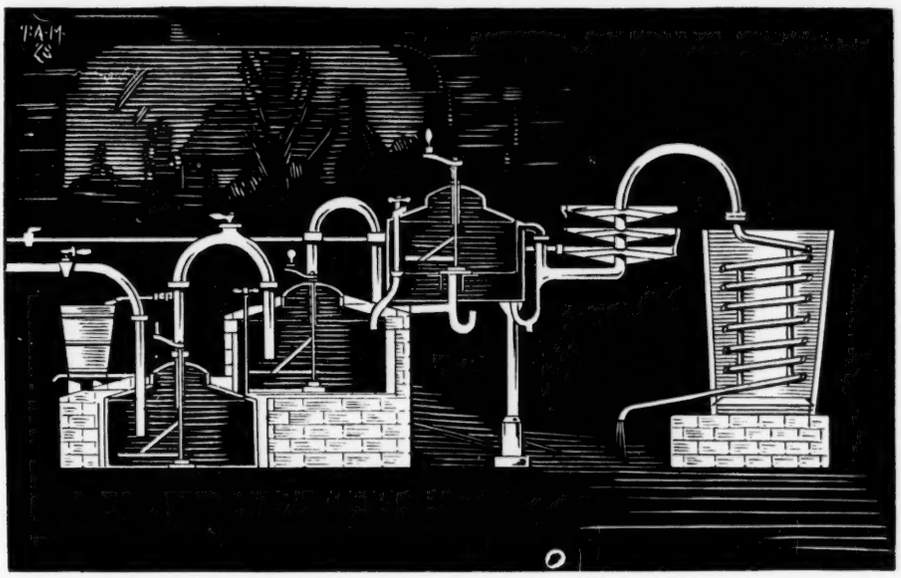
Phenol — In the almost total absence of any spot business it is difficult to ascertain the market for sizeable quantities. It is intimated that an order at 13c lb. for a good sized parcel would not be rejected. There is some movement of parcels which buyers are withdrawing under contract, but otherwise sales for the past month have been very limited.

Potassium Bromide — The market is quiet and has an easy tone based on competition for what business there is available.

Rosins — Prices declined during April and reached what is thought to be the lowest point about the end of that month. More recently demand has improved and prices have begun to show signs of recovery. Most factors look for considerable interest during May and a firm market with good demand during the ensuing summer months. At present the

1914 July	1927 High	1927 Low	1927 Aver.		Current Market	1928 High	1928 Low
				Naphthalene balls, 250 lb bbls			
.02½	.06	.05½	.05¾	wks.....lb.	.....	.05½	.06	.05½
.....	.04½	.04½	.04½	Crushed, chipped bgs wks..lb.	.....	.04½	.04½	.04½
.02½	.05	.04½	.04¾	Flakes, 175 lb bbls wks.....lb.	.....	.05	.05	.05
.....	.21	.21	.21	Nickel Chloride, bbls kegs....lb.	.21	.24	.24	.21
1918	.35	.35	.35	Oxide, 100 lb kegs NY.....lb.	.35	.38	.38	.35
1918	.09	.08½	.08¾	Salt dbl, 400 lb bbls NY....lb.	.09	.09½	.09½	.09
1918	.08¼	.08	.08¼	Single, 400 lb bbls NY.....lb.	.08¼	.09	.09	.08¾
				Nicotine, free 40%, 8 lb tins,				
.....	1.25	1.10	1.24	cases.....lb.	1.25	1.30	1.30	1.25
.....	1.10	1.10	1.10	Sulfate, 10 lb tins.....lb.	1.10	1.15	1.15	1.10
.....	13.00	13.00	13.00	Nitre Cake, 500 lb bbls.....ton	13.00	14.00	14.00	13.00
				Nitrobenzene, redistilled, 1000				
.06½	.10½	.09½	.09½	lb drs wks.....lb.	.10½	.10½	.10½	.10½
				Nitrocellulose, regular drums				
.....	.40	.40	.40	wks.....lb.	.40	Nom.	Nom.	.40
				Low viscosity (soln only)				
.....	.55	.55	.55	Grade 1 drums, wks.....lb.	.55	Nom.	Nom.	.55
.....	.50	.50	.50	Grade 2 drums, wks.....lb.	.50	Nom.	Nom.	.50
3.05	3.60	3.35	3.53	Nitrogenous Material, bulk..unit	.....	3.50	4.00	3.35
1918	.25	.25	.25	Nitronaphthalene, 550 lb bbls.lb.	.....	.25	.25	.25
1918	.14	.14	.14	Nitrotoluene, 1000 lb drs wks.lb.	.14	.15	.15	.14
.16	.25	.25	.25	Nutgalls Aleppy, bags.....lb.	.25	Nom.	Nom.	.25
.15	.17	.17	.17	Chinese, bags.....lb	.17	.18	.18	.17
.....	.22	.22	.22	Powdered, bags.....lb	.22	.24	.24	.22
.08	.03½	.03½	.03½	Oak, tanks, wks.....lb	....	.03½	.03½	.03½
.08	.04	.04	.04	23-25% liq., 600 lb bbl wk .lb.	.04	.04½	.04½	.04
.....	45.00	45.00	45.00	Oak Bark, ground.....ton	45.00	50.00	50.00	45.00
.....	20.00	20.00	20.00	Whole.....ton	20.00	23.00	23.00	20.00
				Orange-Mineral, 1100 lb casks				
.07½	.14½	.13	.13½	NY.....lb.	.11½	12½	.13½	.13
.....	2.20	2.20	2.20	Orthoaminophenol, 50 lb kgs..lb.	2.20	2.25	2.25	2.20
.....	2.50	2.35	2.36½	Orthoanisidine, 100 lb drs....lb.	2.35	2.50	2.50	2.35
.....	.50	.50	.50	Orthochlorophenol, drums....lb.	.50	.65	.65	.50
.....	.18	.18	.18	Orthocresol, drums.....lb.	.18	.28	.28	.18
				Orthodichlorobenzene, 1000 lb				
1918	.06	.06	.06	drums.....lb	.06	.07	.07	.06
				Orthonitrochlorobenzene, 1200				
1918	.32	.32	.32	lb drs wks.....lb.	.32	.35	.35	.32
				Orthonitrotoluene, 1000 lb drs				
1918	.13	.13	.13	wks.....lb.	.17	.18	.18	.17
1918	.85	.85	.85	Orthonitrophenol, 350 lb dr...lb.	.85	.90	.90	.85
1918	.29	.25	.28	Orthotoluidine, 350 lb bbl lc-l.lb.	.29	.31	.31	.29
				Orthonitroparachlorphenol, tins				
1918	.70	.70	.70	.....lb.	.70	.75	.75	.70
.....	.16	.16	.16	Osage Orange, crystals.....lb.	.16	.17	.17	.16
1918	.07	.07	.07	51 deg. liquid.....lb.	.07	.07½	.07	.07
.....	.14½	.14½	.14½	Powdered, 100 lb bags.....lb.	.14½	.15	.15	.14½
				Paraffin, refd, 200 lb cs slabs				
.04¾	.06½	.06½	.06½	123-127 deg. M. P.....lb.	.06½	.06¾	.06¾	.06½
.05¼	.07½	.07½	.07½	128-132 deg. M.P.....lb.	.07½	.07¾	.07¾	.07½
.06¼	.08	.08	.08	133-137 deg. M.P.....lb.	.08	.08½	.08½	.08
1918	.08¾	.08¾	.08¾	138-140 deg. M.P.....lb.	.08¾	.10	.10	.08¾
.....	.29	.26	.26½	Para Aldehyde, 110-55 gal drs.lb.	.20½	.23	.28	.20½
1918	1.00	1.00	1.00	Aminoacetanilid, 100 lb bg.lb.	1.00	1.05	1.05	1.00
				Aminohydrochloride, 100 lb kegs				
.....	1.25	1.25	1.25	.....lb.	1.25	1.30	1.30	1.25
.....	.15	.15	.15	Aminophenol, 100 lb kegs...lb.	.....	1.15	1.15	1.15
.....	.50	.50	.50	Chlorophenol, drums.....lb.	.50	.65	.65	.50
.....	.12	.12	.12	Coumarone, 330 lb drums..lb.	.....	.....	.....	.....
.....	2.25	2.25	2.25	Cymene, refd, 110 gal dr...gal.	2.25	2.50	2.50	2.25
				Dichlorobenzene, 150 lb bbls				
1918	.17	.17	.17	wks.....lb.	.17	.20	.20	.17
1918	.53	.50	.50½	Nitroacetanilid, 300 lb bbls.lb.	.50	.55	.55	.50
				Nitroaniline, 300 lb bbls wks				
1917	.52	.52	.52	.....lb.	.48	.49	.49	.48
				Nitrochlorobenzene, 1200 lb drs				
.....	.32	.32	.32	wks.....lb.	.....	.32	.32	.32
				Nitro-orthotoluidine, 300 lb				
1918	2.75	2.75	2.75	bbls.....lb.	2.75	2.85	2.85	2.75
1918	.50	.50	.50	Nitrophenol, 185 lb bbls....lb.	.50	.55	.55	.50
				Nitrosodimethylaniline, 120 lb				
.....	.92	.92	.92	bbls.....lb.	.92	.94	.94	.92
1918	.30	.25	.26	Nitrotoluene, 350 lb bbls...lb.	.....	.30	.30	.30
				Phenylenediamine, 350 lb bbls				
1918	1.20	1.15	1.18	.....lb.	1.15	1.20	1.20	1.15
				Toluenesulfonamide, 175 lb				
.....	.40	.40	.40	bbls.....lb.	.40	.41	.41	.40
				Toluenesulfonchloride, 410 lb				
.....	.20	.18	.19	bbls wks.....lb.	.20	.22	.22	.20
1918	.45	.38	.41	Toluidine, 350 lb bbls wk...lb.	.40	.42	.42	.40
				Paris Green, Arsenic Basis				
.11	.21	.21	.21	100 lb kegs.....lb.	.....	.25	.25	.20
.....	.19	.19	.19	250 lb kegs.....lb.	.....	.23	.23	.17
.12	.25	.25	.25	Persian Berry Ext., bbls.....lb.	.....	.....	.....	.....
.....	.02½	.02½	.02½	Petrolatum, Green, 300 lb bbl.lb.	.02½	.03	.03	.02¾
1918	.18	.16	.17	Phenol, 250-100 lb drums.....lb.	.13	.20	.13	.20
				Phenyl - Alpha - Naphthylamine,				
1918	1.35	1.28	1.35	100 lb kegs.....lb.	.....	1.35	1.35	1.35
45.00	9.00	8.50	8.75	Phosphate Acid, 16% blk wks.ton	.....	9.00	9.00	9.00
				Phosphate Rock, f.o.b. mines	.....	.....	.....	.....
3.00	3.00	3.00	3.00	Florida Pebble, 68% basis..ton	3.00	3.15	3.15	3.00
2.00	3.50	3.50	3.50	70% basis.....ton	3.50	3.65	3.65	3.50
.....	4.00	3.85	3.96	72% basis.....ton	4.00	4.15	4.15	4.00
4.00	5.35	5.00	5.09	75-74% basis.....ton	.....	5.00	5.00	5.00
4.00	5.75	5.60	5.71½	75% basis.....ton	.....	5.75	5.75	5.75
5.75	6.25	6.00	6.19	77-76% basis.....ton	.....	6.25	6.25	6.25
4.50	5.50	5.00	5.12½	Tennessee, 72% basis.....ton	.....	5.00	5.00	5.00
				Phosphorous Oxychloride 175 lb				
.....	.35	.35	.35	cyl.....lb.	.35	.40	.40	.35
.45	.65	.60	.62	Red, 110 lb cases.....lb.	.60	.65	.65	.60
35	.32	.32	.32	Yellow, 110 lb cases wks.lb.	.....	.32	.32	.32
...	.46	.46	.46	Sesquisulfide, 100 lb cs.....lb.	.....	.46	.46	.46
....	.35	.35	.35	Trichloride, cylinders.....lb.	.....	.....	.....	.....
				Phthalic Anhydride, 100 lb bbls				
.....	.18	.18	.18	wks.....lb.	.18	.20	.20	.18

ALCOHOL THROUGH THE AGES , NUMBER XV



PISTORIUS AND DEROSNE—MILE POSTS

The early years of the nineteenth century were fruitful ones in the development of the art of distillation. Prior to that time only the simplest and crudest Stills were in use.

Edouard Adam, in 1801, contributed the egg-shaped condensing vessels which were instrumental in bringing about a complete change in distillation methods. Then came Derosne of France, who perfected the *tandem* Still and really laid the ground work for Continuous Distillation, while in Germany Pistorius perfected a Still, illustrated above, which combined the advantages of a wash heater and a rectifying column. The Stills of both Pistorius and Derosne stand as mile posts in the development of methods for the production of Industrial Alcohol.

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The latter part of the nineteenth century also records another mile post, for it was during that period that the parent companies of the Kentucky Alcohol Corporation were established. Since then this corporation has been one of the leading producers of Alcohol for Industry, and has been responsible for many of the improvements made in Industrial Alcohol distillation.

KENTUCKY ALCOHOL CORPORATION

30 BROAD STREET , , , NEW YORK CITY

Address Sales Representatives, Listed in Our Former Advertisements, and Those Which Follow, for Your Industrial Alcohol Needs.

NOTE: This is number FIFTEEN of a series of advertisements which will appear in this and other trade publications. We have had so many comments and requests for copies of these advertisements that we have decided to issue the entire series in booklet form, after they have appeared in the publications. As the edition will be limited to the number of requests on hand at the time of publication, we invite you to write for your copy now-- it will be sent FREE when the booklet is completed. Address the Kentucky Alcohol Corporation direct, or any one of our sales representatives, whose names appear regularly in this space.

Prices Current and Comment

Standard Purchasing Power of the Dollar: July 1914 $1.00 - Jan. 1927 68.7c - July 1927 71.7c - April 1928 67.8c

market is firm with prices beginning to move upwards.

Shellac — Despite quiet conditions and lack of demand, prices here have remained unchanged during the month. This is attributed to the fact that both the London and Calcutta markets are very strong with some advances in price. In the Calcutta market especially supplies for May shipment were far below demand. The market here is steady, with bone dry at 51c @ 52c lb., garnet at 46c @ 47c lb., superfine at 48c @ 49c lb., and T. N. at 44c @ 45c lb.

Soda Ash — Interest on this item is principally centered on contract withdrawals. which are of a very satisfactory volume. Spot business has not been brisk during the month but manufacturers have had no trouble in maintaining the schedule on what business has been done.

Sodium Chlorate — The threat of imported competition which caused a reduction in price some six weeks ago is still apparent and in a few isolated instances this competition has resulted in business going to the importers. At the present market level of 5¾c lb. named by domestic manufacturers, demand is up to normal with the latter getting practically all the business at the quoted levels.

Sodium Hyposulfite — Pea crystals are moving fairly well and some business is noted in the technical grade. Sellers here quote $2.65 100 lbs. on the former and $2.40 100 lbs. on the latter.

Sodium Nitrate — Demand continues steady with the market reported in strong position at the importers' price of $2.32½ per 100 lbs. The Chilean government announced during the month that after examining costs of production and conditions ruling in the consuming markets, it had decided not to reduce the present export duty for the nitrate year ending June 30, 1929. World consumption for the nitrate year 1927-28 is estimated at between 2,600,000 and 2,650,000 tons, against 1,753,000 tons in 1926-27. During 1928-29 world consumption is expected to reach 3,000,000 tons.

Starch — As strength and high prices continue to feature the grain market, corn starch has advanced another 15c per 100 pounds during the month. Powdered is now quoted at $4.12 @ $4.32 and pearl at $4.02 @ $4.22 per 100 lbs. in a strong market.

1914 July	1927 High	1927 Low	1927 Aver.		Current Market		1928 High	1928 Low
.....	40.00	37.00	38 50	Pigments Metallic, Red or brown bags, bbls, Pa. wks.....ton	37.00	45.00	45.00	37.00
1918	.63	.63	.63	Pine Oil, 55 gal drums or bbls Destructive dist.....lb.	.63	.64	.64	.63
.....	8.00	8.00	8.00	Prime bbls.....bbl.	8.00	10.60	10.60	8.00
.34	.70	.66	.69	Steam dist. bbls.....gal.	.....	.70	.70	.70
37.50	40.00	40.00	40.00	Pitch Hardwood, ... wks.....ton	40.00	45.00	45.00	40.00
1.50	3.30	3.30	3.30	Plaster Paris, tech, 250 lb bbls .....bbl.	.....	3.30	3.30	3.30
				Potash				
.04½	.07½	.07½	.07½	Potash, Caustic, wks.....lb.	.....	.07½	.07½	.07½
.....	.07½	.07½	.07½	Imported casks c-1.....lb.	.....	.07½	.07½	.07½
8.36	9.00	9.00	9.00	Potash Salts, Rough Kainit 12.4% basis bulk.....ton	.....	9.00	9.00	9.00
.....	9.50	9.50	9.50	14% basis.....ton	.....	9.50	9.50	9.50
13.58	12.40	12.40	12.40	Manure Salts..... 20% basis bulk.....ton	.....	12.40	12.40	12.40
.....	18.75	18.75	18.75	30% basis bulk .....ton	.....	18.75	18.75	18.75
39.07	36.40	36.40	36.40	Potassium Muriate, 80% basis bags.....ton	.....	36.40	36.40	36.40
25.04	27.00	27.00	27.00	Pot. & Mag. Sulfate, 40% basis bags.....ton	.....	27.00	27.00	27.00
47.57	47 30	47.30	47.30	Potassium Sulfate, 90% basis bags.....ton	.....	47.30	47.30	47.30
.08	.09	.09	.09	Potassium Bicarbonate, USP, 320 lb bbls.....lb.	.09	.09½	.09½	.09
.06½	.08½	.08	.08½	Bichromate Crystals, 725 lb casks.....lb.	.09	.09½	.09½	.08½
.....	.12	.11	.11	Powd., 725 lb cks wks....lb.	.12½	.13	.12½	.12
.....	.16	.16	.16	Binoxiate, 300 lb bbls.....lb..	.16	.17	.17	.16
.....	.30	.30	.30	Bisulfate, 100 lb kegs.....lb.	.....	.30	.30	.30
.03½	.05½	.05½	.05½	Carbonate, 80-85% calc. 800 lb casks.....lb.	.05½	.05½	.05½	.05½
.07½	.08½	.08½	.08½	Chlorate crystals, powder 112 lb keg wks.....lb.	.08½	.09	.09	.08½
.....	.08½	.08½	.08½	Potassium Chlorate, Imp 112 lb kegs NY.....lb.	.08½	.08½	.08½	.08½
	.05½	.05½	.05½	Chloride, crys bbls.....lb.	.05½	.05½	.05½	.05½
.....	.27	.27	.27	Chromate, kegs.....lb.	.27	.28	.28	.27
.20	.55	.55	.55	Cyanide, 110 lb. cases .....lb.	.55	.57½	.57½	.55
.13	.11½	.11½	.11½	Metabisulfite, 300 lb. bbl..lb.	.11½	.12	.12	.11½
.14	.16	.16	.16	Oxalate, Neut. 225 lb. bbls.lb.	.16	.17	.17	.16
.....	.11	.11	.11	Perchlorate, casks wks.....lb.	.11	.12	.12	.11
.09½	.15½	.14½	.14½	Permanganate, USP, crys 500 & 100 lb drs wks.....lb.	.15½	.15½	.15½	.15½
.21	.39	.37½	.38	Prussiate, red, 112 lb keg...lb.	.37	.38	.38	.37
.12½	.18	.18	.18	Yellow, 500 lb casks.....lb.	.18	.18½	.18½	.18
.....	.51	.51	.51	Tartrate Neut, 100 lb keg...lb.	.....	.51	.51	.51
.....	.25	.25	.25	Titanium Oxalate, 200 lb bbls .....lb.	.....	.25	.25	25
.....	.04	.04	.04	Pumice Stone, lump bags.....lb.	.04	.05	.05	.04
.04½	.04½	.04½	.04½	250 lb bbls.....lb.	.04½	.06	.06	.04½
.01½	.02½	.02½	.02½	Powdered, 350 lb bags.....lb.	.02½	.03	.03	.02½
2.65	3.75	3.75	3.75	Putty, commercial, tubs..100 lb.	.....	.03½	.03½	.03½
4.25	5.50	5.50	5.50	Linseed Oil, kegs.....100 lb.	.....	.05½	.05½	.05½
.....	3.00	1.50	.94	Pyridine, 50 gal drums.....gal.	.....	1.50	1.50	1.50
.10½	.13	.12	.12½	Pyrites, Spanish cif Atlantic ports bulk.....unit	.13	.13½	.13½	.13
.02½	.03	.03	.03	Quebracho, 35% liquid tks....lb.	.03	.03½	.03½	.03
.....	.03½	.03½	.03½	450 lb bbls c-1.....lb.	.03½	.04	.04	.03½
.....	.04	.04	.04	35% Bleaching, 450 lb bbl..lb.	.04	.05	.05	.04
.04½	.05	.04½	.04½	Solid, 63%, 100 lb bales cif.lb.	.05½	.05½	.05½	.05
.....	.05	.05	.05	Clarified, 64%, bales.....lb.	.....	.05½	.05½	.05
.01½	.06½	.06½	.06½	Quercitron, 51 deg liquid 450 lb bbls.....lb.	.05½	.06	.06	.05½
.02½	.10	.10	.10	Solid, 100 lb boxes.....lb.	.10	.13	.13	.10
22.00	14.00	14.00	14.00	Bark, Rough.....ton	.....	14.00	14.00	14.00
.....	34.00	34.00	34.00	Ground.....ton	34.00	35.00	35.00	34.00
1918	.45	.45	.45	R Salt, 250 lb bbls wks.....lb.	.45	.46	.46	.45
.03	.18	.18	.18	Red Sanders Wood, grd bbls..lb.	.....	.....	.....	.....
1918	1.25	1.25	1.25	Resorcinol Tech, cans.....lb.	1.25	1.35	1.35	1.25
.27	.67	.57	.59	Rosin Oil, 50 gal bbls, first run .....gal.	.....	.57	.57	.57
.38	.72	.62	.64	Second run.....gal.	.....	.62	.62	.62
4.37½	13.00	8.50	10.08½	Rosins, 600 lb bbls 280 lb...unit B.....	.....	8.50	9.10	8.50
4.42½	13.00	8.50	10.17	D.....	.....	8.75	9.65	8.75
4.42½	13.15	8.50	10.23	E.....	.....	9.25	9.75	9.25
4.47½	13.20	8.50	10.49	F.....	.....	9.45	9.95	9.45
4.47½	13.25	8.50	10.58½	G.....	.....	9.60	10.00	9.55
4.47½	13.30	8.50	10.65	H.....	.....	9.70	10.05	9.50
4.55	13.35	8.55	10.79½	I.....	.....	9.80	10.10	9.60
4.49½	14.80	8.65	11.05	K.....	.....	9.80	10.15	9.70
5.47½	15.00	8.80	11.15½	M.....	.....	9.85	10.30	9.85
6.12½	15.85	9.15	11.62	N.....	.....	10.65	11.00	10.45
6.67½	16.60	10.50	12.58	WG.....	.....	10.75	11.65	10.75
6.92½	18.55	12 00	14.34	WW.....	.....	11.35	12.65	11.35
.....	24.00	24.00	24.00	Rotten Stone, bags mines....ton	24.00	30.00	30.00	24.00
.....	.07	.07	.07	Lump, imported, bbls. ....lb.	.07	.08	.08	.07
.05½	.09	.09	.09	Selected bbls.....lb.	.09	.12	.12	.09
.02½	.02	.02	.02	Powdered, bbls.....lb.	.02	.05	.05	.02
.02½	.04½	.04½	.04½	Sago Flour, 150 lb bags.....lb.	.04½	.05	.05	.04½
.60	.90	.90	.90	Sal Soda, bbls wks.....100 lb.	.....	.....	.....	.....
11.00	19.00	19.00	19.00	Salt Cake, 94-96% c-1 wks...ton	19.00	20.00	20.00	19.00
8.00	15.00	15.00	15.00	White, 87% wks.....ton	15.00	17.00	17.00	15.00
.04½	.06½	.06½	.06½	Saltpetre, double refd granular 450-500 lb bbls.....lb.	.06½	.06½	.06½	.06½
.....	.01½	.01½	.01½	Satin, White, 500 lb bbls.....lb.	.....	.01½	.01½	.01½
.18½	.66	.47	.57	Shellac Bone dry bbls.....lb.	.51	.52	.61	.49
.15	.57	.41	.48	Garnet, bags.....lb.	.46	.47	.55	.46
.14½	.65	.40	.52½	Superfine, bags.....lb.	.48	.49	.58	47
.15½	.37	.57	.49	T. N. bags.....lb.	.44	.45	.55	.42
1918	.50	.50	.5C	Schaeffer's Salt, kegs.....lb.	.53	.57	.57	.53

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Prices Current and Comment

Standard Purchasing Power of the Dollar: July 1914 $1.00 - Jan. 1927 68.7c - July 1917 71.7c - April 1928 67.8c

Tankage — Quotations at New York have declined to $4.60 and 10 per unit as have those at South America.

Tin — The price of metal has declined 1½c lb. since last reported, now being quoted at 51¾c lb.

Tin Oxide — Very little variation in the demand is seen, with April about on a level with the previous months of the year. Sellers are getting 56c lb. in fair sized parcels.

Toners — Para has been subjected to severe competition and although quoted prices remain unchanged, business on firm bids has been reported as low as 70c lb.

Turpentine — Prices fell rather low during April but are now recovering due to increased buying at the low figures, which reduced available supplies. Spirits are now quoted at 55c @ 60c gal. and steam distilled at 51c @ 53c gal.

Valonia Mixture — Has declined in price, now being quoted at $62.00 per ton.

Wattle Bark — In view of the increased demand and the shortage of supplies, prices have advanced to $61.00 @ $62.00 per ton.

Zinc Ammonium Chloride — Keen competition between domestic factors and importers is still very noticeable with the latter group holding the upper hand in this market. Sales have been made during recent weeks at $4.85 at $5.00 100 lbs. as to seller and position.

OILS AND FATS

Chinawood Oil — At the present time both spot barrels and Coast tanks are ¼c lb. higher in price than when last reported. This marks a decline of ½c lb. on each from the high prices which prevailed on both barrels and tanks about the middle of April. The market, however, has been very spotty with no indications of real strength. Spot barrels are now being quoted at 15c @ 15½c lb. and Coast tanks at 13½c lb.

Coconut Oil — The past month has witnessed little of note in this market although at present the market seems to be showing some faint signs of strength. Cochin oil has remained unchanged. Ceylon oil in tanks at New York has declined a shade now being quoted at 8⅝c@ 8¾c lb. while the barrel price is unchanged at quoted figures. Manila oil in barrels at New York has declined ⅛c lb.,

1914 July	1927 High	1927 Low	1927 Aver.		Current Market		1928 High	1928 Low
.....	6.00	6.00	6.00	Silica, Crude, bulk mines....ton	8.00	11.00	11.00	8.00
.....	15.00	15.00	15.00	Refined, floated bags.....ton	22.00	30.00	30.00	22.00
.....	32.00	32.00	32.00	Air floated bags.....ton	.....	.....	.....	.....
.....	55.00	55.00	55.00	Extra floated bags.....ton	32.00	40.00	40.00	32.00
10.00	15.00	15.00	15.00	Soapstone, Powdered, bags f.o.b. mines.....ton	15.00	22.00	22.00	15.00
				Soda				
.67½	1.32½	1.32½	1.32½	Soda Ash, 58% dense, bags c-l wks.....100 lb.	.....	1.40	1.40	1.40
.57½	2.14	2.04	2.12	58% light, bags del NY..100 lb.	2.04	2.29	2.29	2.04
.....	1.32½	1.32½	1.32½	Contract, bags c-1 wks.100 lb.	.....	1.32½	1.32½	1.32½
2.50	4.16	4.06	4.14½	Soda Caustic, 76% grnd & flake drums del NY.....100 lb.	4.16	4.21	4.21	4.16
.....	3.76	3.66	3.74½	76% solid drs del NY...100 lb.	3.76	3.91	3.91	3.76
.....	3.00	3.00	3.00	Contract, c-1 wks.....100 lb.	.....	3.00	3.00	3.00
.03½	.04½	.04½	.04½	Sodium Acetate, crystals, 450 lb bbls wks.....lb.	.04½	.05	.05	.04½
.....	.19	.18	.18½	Arsenate, drums.. .....lb.	.....	.....	.....	.....
.....	1.00	1.00	1.00	Arsenite, drums.....gal.	.....	.....	.....	.....
1.00	2.41	2.41	2.41	Bicarb., 400 lb bbl NY..100 lb.	.....	2.41	2.41	2.41
.04½	.06½	.06½	.06½	Bichromate, 500 lb cks wks.lb.	.07	.07½	.07	.06½
.02½	.08½	.08½	.08½	Bisulfite, 500 lb bbl wks....lb.	.....	.04	.04	.04
.60	1.30	1.30	1.30	Carb. 350 lb bbls NY...100 lb.	1.30	1.35	1.35	1.30
.07½	.06½	.06½	.06½	Chlorate, 112 lb kegs wks...lb	.05½	06½	.06½	.05½
.....	12.00	12.00	12.00	Chloride, technical.....ton	12.00	13.00	13.00	12.00
.22	.20	.20	.20	Cyanide, 96-98%, 100 & 250 lb drums wks.....lb.	.....	.20	.20	.20
1918	.08½	.08½	.08½	Fluoride, 300 lb bbls wks...lb.	.08½	.09	.09	.08½
.....	.22	.22	.22	Hydrosulfite, 200 lb bbls f.o.b. wks.....lb.	.22	.24	.24	.22
.....	.05	.05	.05	Hypochloride solution, 100 lb cbys.....lb.	.....	.05	.05	.05
1.40	2.65	2.65	2.65	Hyposulfite, tech, pea crys 375 lb bbls wks....100 lb.	2.65	3.05	3.05	2.65
1.30	2.40	2.40	2.40	Technical, regular crystals 375 lb bbls wks... 100 lb.	2.40	2.65	2.65	2.40
.....	.70	.45	.62	Metanilate, 150 lb bbls.....lb.	.....	.45	.45	.45
.....	.02½	.02½	.02½	Monohydrate, bbls.....lb.	.....	.....	.....	.....
1918	.55	.55	.55	Naphthionate, 300 lb bbl...lb.	.55	.57	.57	.55
2.12½	2.67	2.25	2.52½	Nitrate, 92%, crude, 200 lb bags c-1 NY.....100 lb.	.....	2.32½	2.45	2.30
.05½	.08½	.08	.08	Nitrite, 500 lb bbls spot ...lb.	.08	.08½	.08½	.08
.....	.25	.25	.25	Orthochlorotoluene, sulfonate, 175 lb bbls wks.....lb	.25	.27	.27	.25
.....	.20	.20	.20	Oxalate Neut, 100 lb kegs..lb.	.20	.23	.23	.20
.....	3.90	3.90	3.90	Paratoluene, tri-sodium, tech. 100 lb bbls c-1....100 lb.	.....	3.90	3.90	3.90
.....	.08	.08	.08	Sulfonate, 175 lb bbls....lb.	.08	.09	.09	.08
.19	.21	.21	.21	Perborate, 275 lb bbls.....lb.	.21	.22	.22	.21
2.12½	3.25	3.25	3.25	Phosphate, di-sodium, tech. 550 lb bbls.....100 lb.	3.25	3.55	3.55	3.25
.....	.69	.69	.69	Picramate, 100 lb kegs.....lb.	.69	.72	.72	.69
.08½	.12	.11	.12	Prussiate, Yellow, 350 lb bbl wks.....lb.	.12	.12½	.12½	.12
.....	.13½	.13½	.13½	Pyrophosphate, 100 lb keg..lb.	.13½	.14	.14	.13½
.02	1.20	1.20	1.20	Silicate, 40 deg clear 55 gal drs wks.....100 lb.	1.20	1.45	1.45	1.20
.02	.85	.85	.85	40 deg turbid 55 gal drs wks.....100 lb.	.85	1.10	1.10	.85
.....	.04½	.04½	.04½	Silicofluoride, 450 lb bbls NY .....lb.	.04½	.05	.05	.04½
.....	.48½	.48½	.48½	Stannate, 100 lb drums.....lb.	.48½	.49	.49	.48½
.....	.20	.20	.20	Stearate, bbls.....lb.	.18	.22	.29	.18
.....	.16	.16	.16	Sulfanilate, 400 lb bbls....lb.	.16	.18	.18	.16
.....	.02½	.02½	.02½	Sulfate Anhyd., 550 lb bbls c-1 wks.....lb.	.02½	.02½	.02½	.02½
.01½	.02½	.02½	.02½	Sulfide, 30% crystals, 440 lb bbls wks.....lb.	.02½	.02½	.02½	.02½
.....	.03½	.03½	.03½	62% solid, 650 lb drums 1c-1 wks.....lb.	.03½	.04	.04	.03½
.02½	.03½	.03½	.03½	Sulfite, crystals, 400 lb bbls wks.....lb.	.03½	.03½	.03½	.03½
.....	.40	.40	.40	Sulfocyanide, bbls.....lb.	.40	.50	.50	.40
.....	.85	.80	.82½	Tungstate, tech, crystals, kegs .....lb.	.80	.85	.85	.80
1917	.40	.35	.37	Solvent Naphtha, 110 gal drs wks.....gal.	.35	.40	.40	.35
1918	.01½	.01½	.01½	Spruce, 25% liquid, bbls.....lb.	.....	.01½	.01½	.01½
1918	.01	.01	.01	25% liquid, tanks wks.....lb.	.....	.01	.01	.01
.....	.02	.02	.02	50% powd., 100 lb bag wks.lb.	.02	.02½	.02½	.02
.....	3.22	3.07	3.14½	Starch, powd., 140 lb bags .....100 lb.	4.12	4.32	4.32	3.07
1.99	3.12	2.97	3.03	Pearl, 140 lb bags.....100 lb.	4.02	4.22	4.22	2.97
.05½	.06	.04½	.05½	Potato, 200 lb bags .....lb	.05½	.06½	.06½	.05½
.05½	.06½	.06½	.06½	Imported bags.....lb	.05½	.06½	.06½	.05½
.05½	.08	.06	.07	Soluble.....lb.	.08	.08½	.08½	.08
.07	.09½	.09	.09½	Rice, 200 lb bbls.....lb.	.09½	.10	.10	.09½
.04½	.06½	.06½	.06½	Wheat, thick bags.....lb.	.06½	.07	.07	.06½
.04½	.09½	.09½	.09½	Thin bags.....lb.	.09½	.10	.10	.09½
1918	.07½	.07½	.07½	Strontium carbonate, 600 lb bbls wks.....lb	.07½	.07½	.07½	.07½
.07½	.08½	.08	.08	Nitrate, 600 lb bbls NY....lb.	.08½	.09	.09	.08½
				Sulfur				
1.85	2.05	.205	2.05	Sulfur Brimstone, broken rock, 250 lb bag c-1.....100 lb.	.....	2.05	2.05	2.05
.....	18.00	18.00	18.00	Crude, f.o.b. mines.... ton	18.00	19.00	19.00	18.00
.....	2.40	2.40	2.40	Flour for dusting 99½%, 100 lb bags c-1 NY.....100 lb.	.....	2.40	2.40	2.40
2.00	2.50	2.50	2.50	Heavy bags c-1.....100 lb.	.....	2.50	2.50	2.50
2.20	3.45	3.45	3.45	Flowers, 100%, 155 lb bbls c-1 NY.....100 lb.	.....	3.45	3.45	3.45
1.85	2.65	2.65	2.65	Roll, bbls 1c-1 NY.....100 lb.	2.65	2.85	2.85	2.65

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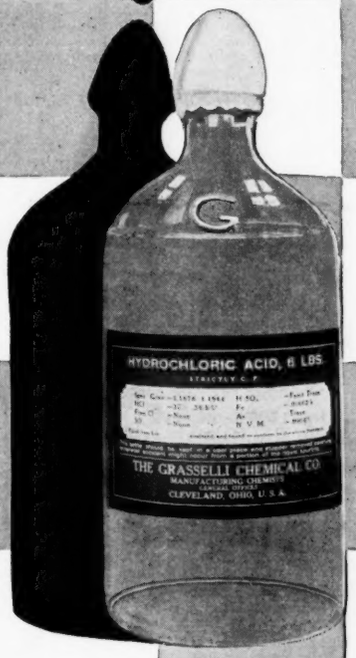

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Prices Current and Comment

Standard Purchasing Power of the Dollar: July 1914 $1.00 - Jan. 1927 68.7c - July 1927 71.7c - April 1928 67.8c

now being quoted at 9⅜c @ 9½c lb.; tank price at New York has remained unchanged; and Coast tanks have declined ⅛c lb. to 8¼c lb.

Cod Oil — Has become very scarce. This scarcity has been reflected in the barrel price which has advanced 1c @ 2c. gal. during the month, now being quoted at 68c @ 69c gal.

Corn Oil — Strength in the cottonseed oil market and higher prices for grain, have combined to place this market in an exceedingly strong position. The tank price on crude oil at the mills has advanced further, now being quoted at 9¼c lb.

Cottonseed Oil — The improvement in conditions existing in this market, which was reported here last month, has continued during the past month. Crude oil has made a further advance of ¼c @ ½c lb. since last reported, while PSY, spot and futures, has advanced ⅜c lb. The market is reported as steady and strong after these advances.

Greases — Prices declined soon after last reported but scarcity of supplies coupled with good demand since that time, has brought about high prices which are ¼c @ ½c lb. higher than those last quoted. Brown is now at 7½c lb.; yellow at 7¾c lb.; and choice white at 10c lb.

Lard Oil — Prime and off prime have remained unchanged at quoted figures. Both extra and extra No. 1 have fluctuated considerably. The former declined in price to 12¼c lb. and since advanced to 12½c lb. at which figure it remains. Extra No. 1 advanced to 12c lb., declined to 11½c lb. and then resumed its position at 12c lb. at which figure it is now quoted.

Linseed Oil — Has advanced 0.4c lb. since last reported. The market is very strong although comparatively quiet for this season of the year. Barrels, spot, are now quoted at 10.2c lb., while the tank price is 9.4c lb. Five-barrel lots are quoted at 10.6c lb.

Neatsfoot Oil — Both twenty-degree cold test and extra have advanced ¼c lb. in price during the past month. This has been due to a better demand for these grades. Pure has remained unchanged at quoted figures.

Oleo Oil — All grades have been lower in price during the month, but recently increased activity and better demand have strengthened the market and brought about a return to higher prices. No. 1 alone, is now lower than when last quoted, it being at 14¾c lb. Both No. 2 and No. 3 are higher, however, the former being quoted at 14c lb. and the latter at 13c lb.

Olive Oil — Denatured oil is somewhat lower than when last quoted as more adequate supplies of the new crop are beginning to make themselves felt. It is

1914 July	1927 High	1927 Low	1927 Aver.		Current Market	1928 High	1928 Low
				Sulfur Chloride, red, 700 lb drs wks.....lb.	.05	.05½	.05½	.05
.....	.05	.05	.05	Yellow, 700 lb drs wks.....lb.	.03½	.04½	.04½	.03½
.....	.03¾	.03¼	.03¼	Sulfur Dioxide, 150 lb cyl....lb.	.08	.08½	.08½	.08
.....	.08	.08	.08	Extra, dry, 100 lb cyl.....lb.	.17	.19	.19	.17
.....	.17	.17	.17	Sulfuryl Chloride, 600 lb dr...lb	.10	.65	.65	.10
.....	.65	.65	.65	Stainless, 600 lb bbls.....lb.	.11	.11½	.11½	.11
.....	.11	.11	.11	Extract, 450 lb bbls.....lb.	.05½	.06	.06	.05½
.....	.05	.05	.05	Sicily Leaves, 100 lb bg...ton	.....	130.00	130.00	130.00
.....	130.00	130.00	130.00	Ground shipment.....ton	.....	72.00	72.00	72.00
62.00	80.00	72.00	73.75	Virginia, 150 lb bags.....ton	55.00	60.00	60.00	55.00
40.00	55.00	55.00	55.00	Talc, Crude, 100 lb bgs NY..ton	12.00	15.00	15.00	12.00
.....	12.00	12.00	12.00	Refined, 100 lb bgs NY..ton	16.00	18.00	18.00	16.00
15.00	16.00	16.00	16.00	French, 220 lb bags NY...ton	30.00	35.00	35.00	30.00
15.00	30.00	30.00	30.00	Refined, white, bags....ton	38.00	45.00	45.00	38.00
.....	38.00	38.00	38.00	Italian, 220 lb bags NY...ton	40.00	50.00	50.00	40.00
35.00	40.00	40.00	40.00	Refined, white, bags....ton	50.00	55.00	55.00	50.00
.....	50.00	50.00	50.00	Tankage Ground NY.....unit	.....	4.60&10	5.10&10	4.65&10
3.50	4.85	4.00	4.41	High grade f.o.b. Chicago.unit	.....	3.90&10	3.90&10	3.90&10
3.10	5.25	3.75	4.29	South American cif.....unit	.....	4.60&10	4.95&10	4.60&10
.....	5.25	4.00	4.38½	Tapioca Flour, high grade bgs.lb.	.04½	.05	.05	.04½
.02	.04½	.04½	.04½	Medium grade, bags.....lb.	.03¾	.04	.04	.03¾
.01¾	.03¾	.03½	.03½	Tar Acid Oil, 15%, drums...gal.	.26	.27	.27	.26
.....	.26	.26	.26	25% drums.....gal.	.29	.30	.30	.29
.....	.29	.29	.29	Coke Oven, tanks wks.....lb	.07	.08	.08	.07
.....	.07	.07	.07	Kiln Burnt, bbl.....bbl.	.....	13.50	13.50	13.50
6.50	16.00	13.50	14.87½	Retort, bbls.....bbl.	13.50	15.00	15.00	13.50
6.76	18.50	13.50	15.38½	Terra Alba Amer. No. 1, bags or bbls mills.....100 lb.	1.15	1.75	1.75	1.15
.75	1.15	1.15	1.15	No. 2 bags or bbls...100 lb.	1.50	2.00	2.00	1.50
.60	1.50	1.50	1.50	Imported bags.....100 lb.	.02	.02½	.02½	.02
.80	2.00	2.00	2.00	Tetralene, 50 gal drs wks.....lb.	.....	.20	.20	.20
.....	.20	.20	.20	Thiocarbanilid, 170 lb bbl.....lb.	.22	.24	.24	.22
.....	.22	.22	.22	Tin Bichloride, 50% soln, 100 lb bbls wks.....lb.	.....	.15½	.17½	.15½
.11½	.20½	.17½	.19	Crystals, 500 lb bbls wks...lb.	.....	.39½	.41½	.39
.23	.48	.41½	.45	Metal Straits NY.....lb.	.....	.51½	.58	.51
.....	.71½	.58	.65	Oxide, 300 lb bbls wks.....lb.	.....	.56	.75	.57
.36	.75	.70	.71	Tetrachloride, 100 lb drs wks.....lb.	.....	.33	.35½	.33
.....	.48	.35½	.39	Titanium Oxide, 200 lb bbl...lb.	.....	.40	.40	.40
.....	.40	.40	.40	Pigment, bbls wks.....lb.	.13½	.14	.14	.13½
.....	.13½	.13½	.13½	Toluene, 110 gal drs wks.....lb.	.....	.40	.40	.40
1918	.40	.40	.40	8000 gal tank cars wks.....lb.	.....	.35	.35	.35
.....	.35	.35	.35	Toluidine, 350 lb bbls.....lb.	.90	.94	.94	.90
1918	.90	.90	.90	Mixed, 900 lb drs wks.....lb.	.31	.32	.32	.31
1918	.31	.31	.31	Toner Lithol, red, bbls.....lb.	.85	.90	.90	.85
.....	.85	.85	.85	Para, red, bbls.....lb.	.75	.80	.80	.75
.....	.75	.75	.75	Toluidine.....lb.	1.70	1.75	1.80	1.70
1918	1.75	1.75	1.75	Triacetin, 50 gal drs wks.....lb.	3.60	3.90	3.90	3.60
.....	3.60	3.60	3.60	Tricresyl Phosphate, drs.....lb.	.36	.50	.50	.36
.....	.36	.36	.36	Triphenylguanidine.....lb.	.69	.73	.73	.69
.....	.70	.69	.69	Phosphate, drums.....lb.	.70	.75	.75	.70
.....	.70	.70	.70	Tripoli, 500 lb bbls.....100 lb.	2.50	3.00	3.00	2.50
.....	2.50	2.50	2.50	Turpentine Spirits, bbls.....gal.	.55	.60	.64½	.58¾
.49	.86	.53½	.65	Wood Steam dist. bbls....gal.	.51	.53	.59	.46
.34	.76	.46	.55	Urea, pure, 112 lb cases.....lb.	.18	.20	.20	.18
.....	.18	.18	.18	Valonia Beard, 42%, tannin bags.....ton	74.00	76.00	76.00	74.00
.....	70.00	66.00	61.52	Cups, 30-31% tannin.....ton	.....	Nom.	55.00	55.00
.....	49.50	39.00	43.96	Mixture, bark, bags.....ton	.....	62.00	64.00	63.00
.....	68.00	43.00	48.52	Vermilion, English, kegs.....lb.	1.85	1.90	1.95	1.75
.55	1.95	1.55	1.94¾	Wattle Bark, bags.....ton	61.00	62.00	76.00	58.00
.....	59.00	49.50	53.71	Extract 55%, double bags ex-dock.....lb.	.....	.06½	.06½	.05¾
.....	.05¾	.05¾	.05¾	Whiting, 200 lb bags, c-1 wks .....100 lb.	.....	1.25	1.25	1.25
.45	1.25	1.25	1.25	Alba, bags c-1 NY.....ton	.....	13.00	13.00	13.00
.....	13.00	13.00	13.00	Gilders, bags c-1 NY...100 lb.	.....	1.35	1.35	1.35
.55	1.35	1.35	1.35	Zinc Ammonium Chloride powd., 400 lb bbls.....lb.	4.85	5.05	.05½	5.85
.....	.06½	.06½	06½	Carbonate Tech, bbls NY..lb.	.09½	.10	.10	.09½
.08½	.09½	.09½	.09½	Chloride Fused, 600 lb drs. wks.....lb.	.....	.06	.06	.06
.04½	.06	.06	.06	Gran., 500 lb bbls wks.....lb.	.06½	.06½	.06½	.06½
.04½	.06½	.06½	.06½	Soln 50%, tanks wks...100 lb.	.....	3.00	3.00	3.00
.....	3.00	3.00	3.00	Cyanide, 100 lb drums.....lb.	.40	.41	.41	.40
.....	.40	.40	.40	Dust, 500 lb bbls c-1 wks...lb.	.....	.09	.09	.09
.05¾	.09	.09	.09	Metal, high grade slabs c-1 NY.....100 lb.	.....	6.15	6.40	6.07½
.....	7.35	6.40	6.66	Oxide, American bags wks..lb.	.07½	.07½	.07½	.07½
.05½	.07½	.07½	.07½	French, 300 lb bbls wks..lb.	.10½	.12½	.12½	.10½
.06½	.10½	.10½	.10½	Sulfate, 400 bbl wks.....lb.	.03½	.03½	.03½	.03½
.02½	.03½	03	.03½	Sulfide, 500 lb bbls.....lb.	.30	.32	.32	.30
.....	.30	.30	.30	Sulfocarbolate, 100 lb keg..lb.	.29	.30	.30	.29
.....	.29	.29	.29	Xylene, 10 deg tanks wks....lb.	.....	.32	.32	.32
.....	.38	32	.37	Commercial, tanks wks....lb.	.30	.32	.32	.30
.....	.36	.30	.35	Xylidine, crude.....lb.	.....	.38	.38	.38
1918	.35	.35	.35	Zirconium Oxide, Nat. kegs..lb.	.02½	.03	.03	.02½
.....	.02½	.02½	.02½	Pure kegs.....lb.	.45	.50	.50	.45
.....	.45	.45	.45	Semi-refined kegs.....lb.	.08	.10	.10	.08
.....	.08½	.08	.08					

Oils and Fats

.08	.14	.13	.13	Castor, No. 1, 400 lb bbls....lb.	.14	.14½	.14½	.14
.08	.14	.12½	.13½	No. 3, 400 lb bbls.....lb.	.13½	.14	.14	.13½
.....	.18	.17	.18	Blown, 400 lb bbls.....lb.	.15½	.16	.17	.15½
.06½	.31	.13½	.19	China Wood, bbls spot NY...lb.	.15	15½	.17	.15
.05½	.18	.12½	.16½	Tanks, spot NY.....lb.	.....	Nom.	Nom.	Nom.
				Coast tanks, May.....lb.	.....	.13½	.14½	.13
1918	.12	.12	.12	Cocoanut, edible, bbls NY....lb.	.....	.10½	.11½	.10½
.09½	.09½	.09	.09	Ceylon, 375 lb bbls NY....lb.	.09½	.09½	.10	.09½
.08½	.08½	.08	.08½	8000 gal tanks NY.....lb.	.08½	.08½	.09	.08½
.10½	.10½	.09½	.10	Cochin, 375 lb bbls NY....lb.	.10½	.10½	.10½	.10½

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Prices Current and Comment

Standard Purchasing Power of the Dollar: July 1914 $1.00 - Jan. 1927 68.7c - July 1927 71.7c - April 1928 67.8c

now quoted at $1.23 @ $1.25 gal. Foots has advanced consistently during the month and is now quoted on spot at 10½c lb.

Palm Oil — Lagos has remained unchanged in price during the month while Niger has advanced ¼c lb. due to some scarcity in supplies. The fact that the price trends in these two grades seem to be approaching each other has lead to the oft-repeated discussion regarding the possibility of both grades selling at the same price eventually. Most factors, however, believe that the condition will continue to exist over any long period of time. Lagos is now quoted at 7⅞c @ 8c lb. and Niger at 7¼c @7⅜c lb.

Perilla Oil — As the scarcity of supplies at the Coast becomes increasingly evident, the price of tanks at the Coast has advanced accordingly. Quotations are now ½c lb. higher than when last reported, being at 11¼c lb. The barrel price in New York has also advanced, now being quoted at 13¼c lb.

Rapeseed Oil — Japanese oil is now out of the market entirely and prices nominal. Some purely inside business is being done on futures for August at 78c @ 80c lb. Blown oil and English oil are unchanged at quoted levels.

Red Oil — Demand here has been good but not very great in proportion to that for stearic acid. Prices have been slightly higher during the month but are now at the same level as when last quoted.

Sesame Oil — Yellow oil is somewhat lower, now being quoted at 12½c @ 13c lb. in barrels at New York.

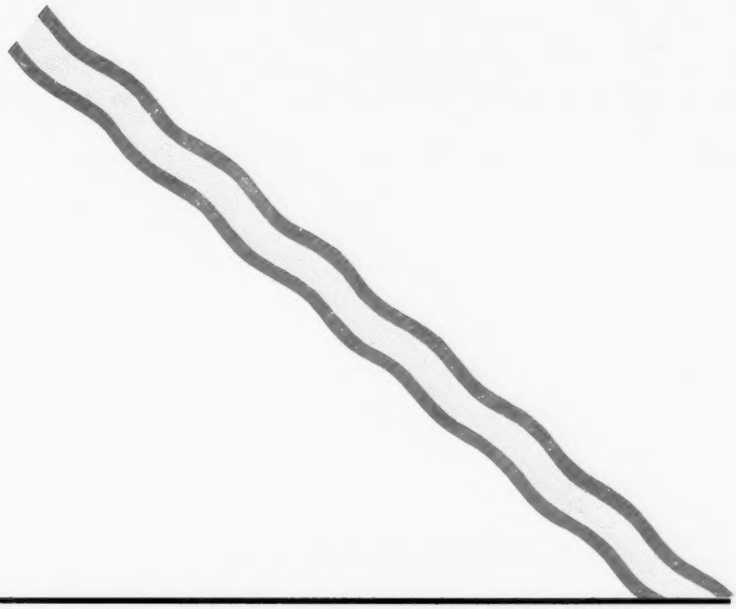
Stearic Acid — Unusual activity has featured this market during the past month. Producers report that they have been unable to keep up with the demand which has been extraordinary. As a result, prices on all grades have advanced ¼c lb. Double pressed, distilled, is now quoted at 11¼c @ 11¾c lb., while saponified is at 11¾c @ 12¼c lb. Triple pressed, distilled is at 13¾c @ 14¼c lb.

Stearine Oleo — After going as low as 11⅜c lb., has returned to about the same level as quoted last month. Is now at 11⅝c @11¾c lb.

Tallow — Extra has not been very strong, but recently has recovered somewhat and at present the outlook is better. Is now being quoted at 8⅝c lb., while edible is unchanged at 10½c lb.

Tallow Oil — Has been quite firm so that acidless oil has advanced ¼c lb. during the month, now being quoted at 10½c lb. in tanks and 11½c lb. in barrels.

1914 July	1927 High	1927 Low	1927 Aver.			Current Market	1928 High	1928 Low
.05¼	.10	.08½	.09½	Tanks NY	lb.	.....	.09½	.09½	.09½
.....	.09¼	.08½	.09½	Manila, bbls NY	lb.	.09¼	.09½	.10	.09¼
.....	.08¼	.08½	.08⅝	Tanks NY	lb.	.....	.08¼	.08¼	.08¼
.....	.08¼	.08	.08½	Tanks, Pacific Coast	lb.	.....	.08¼	.08½	.08½
				Cod, Newfoundland, 50 gal bbls					
.36¼	.66	.63	.64½		gal.	.68	.69	.69	.63
.36½	.59	.59	.59	Tanks NY	lb	.62	.63	.63	.62
				Cod Liver see Chemicals					
1918	.06	.06	.06	Copra, bags	lb.	.....	.05¼	.06¼	.05¼
.06½	.11	.07	.10	Corn, crude, bbls NY	lb.	.....	.11	.11	.10¼
.06¼	.09¼	.07	.08½	Tanks, mills	lb.	.....	.09½	.10	.08¼
1916	.14	.10½	.12	Refined, 375 lb bbls NY	lb.	.....	.12½	.12½	.12½
1916	.12	.11	.11	Tanks	lb.	.....	.11½	.11½	.11½
.06	.09½	.06¼	.08	Cottonseed, crude, mill	lb.	.09	.09¼	.09¼	.07¼
.07¼	.11¼	.08 1/5	.10	PSY, 100 lb bbls spot	lb.	.....	10.65	10.65	.09¼
				May—July	lb.	.....	10.67	10.67	.09½
				Degras, American, 50 gal bbls					
.02½	.04½	.04½	.04½	NY	lb.	.04½	.05	.05	.04½
.03¼	.04¼	do	do	English, brown, bbls NY	lb.	.....	.05¼	.05¼	.04¼
.03½	.05¼	.05¼	.05¼	Light, bbls NY	lb.	.....	.05¼	.05¼	.05¼
.04¼	.07½	.06	.06⅝	Greases, Brown	lb.	.....	.07½	.07½	.07
.05¼	.08	.06½	.07½	Yellow	lb.	.....	.07¼	.08	.07
.06¼	.10¼	.08¼	.09⅜	White, choice bbls NY,	lb.	.....	.10	.10½	.09¼
.....	.....	.....	.....	Herring, Coast, Tanks	gal.	.40	Nom.	Nom.	.40
.009	.09½	.09	.09⅛	Horse, bbls	lb.	.09½	Nom.	Nom.	.09½
.13	.16¼	.14¼	.15½	Lard Oil, edible, prime	lb.	.....	.16	.16	.15¼
.....	.13¼	.10¼	.12	Extra, bbls	lb.	.....	.12½	.13	.12½
.09	.12½	.10⅛	.11¼	Extra No. 1, bbls	lb.	.....	.12	.12¼	.11¼
.09½	.13¼	.12½	.13⅛	Off prime, bbls	lb.	.....	.14	.14	.13¼
.078	.11 4/5	.10 2/5	.11	Linseed, Raw, five bbl lots	lb.	.....	10.6	10.6	10.0
.077	.11 9-10	.09 6-10	.10⅛	Bbls c-l spot	lb.	.....	10.2	10.2	9.6
.076	.10½	.09	.09 7-12	Tanks	lb.	.....	9.4	9.4	8.8
.....	.09¼	.09¼	.09½	Lumbang, Coast	lb.	.....	.09¾	.09¼	.09¼
.33½	.47½	.44	.46⅜	Menhaden Tanks, Baltimore	gal.	.....	Nom.	.46	.46
.....	.90	.10	.36⅜	Blown, bbls NY	lb.	.....	.09	.09	.09
.43	.70	.67	.68½	Extra, bleached, bbls NY	gal.	.....	.70	.70	.67
.39	.66	.63	.62	Light, pressed, bbls NY	gal.	.63	.64	.64	.63
.37	.66	.69	.67½	Yellow, pressed, bbls NY	gal.	.66	.67	.67	.66
				Mineral Oil, white, 50 gal bbls					
					gal.	.40	.60	.60	.40
				Russian, gal	gal.	.93	1.00	1.00	.95
.14	.18¾	.14½	.17½	Neatsfoot, CT, 20° bbls NY	lb.	.....	.18½	.18¾	.18¼
.....	.13½	.10½	.12	Extra, bbls NY	lb.	.....	.12½	.12½	.12
.....	.16¾	.12½	.14½	Pure, bbls NY	lb.	.....	.15½	.16¼	.15¼
.08	.18½	.10	.13¾	Oleo, No. 1, bbls NY	lb.	.....	.14¾	.17⅞	.14½
.07½	.17	.08¾	.12	No. 2, bbls NY	lb.	.....	.14	.15½	.12¾
.07½	.14	.08½	.10½	No. 3, bbls NY	lb.	.....	.13	.14	.11¾
.83	1.75	1.40	1.48½	Olive, denatured, bbls NY	gal.	1.23	1.25	1.30	1.20
1918	2.00	2.45	2.15	Edible, bbls NY	gal.	1.90	2.00	2.00	1.90
.07½	.10½	.08¾	.09⅛	Foots, bbls NY	lb.	.....	.10½	.10½	.09¾
.08¾	.09½	.09	.09½	Palm, Kernel, Casks	lb.	.....	.09½	.09½	.09½
.07	.08¾	.07½	.08	Lagos, 1500 lb casks	lb.	.07¾	.08	.08¼	.07¾
.....	.08¼	.07¼	.07½	Niger, Casks	lb.	.07¼	.07¾	.07¾	.07
.....	.14½	.12	.12	Peanut, crude, bbls NY	lb.	.12	.12½	.12½	.12
.....	.15½	.14¼	.15	Refined, bbls NY	lb.	.14½	.15	.15	.14½
.....	.16½	.12½	.14	Perilla, bbls NY	lb.	.....	.13½	.13½	.13
.....	.14½	.10	.12	Tanks, Coast	lb.	.....	.11¼	.11¼	.10½
.....	1.70	1.70	1.70	Poppyseed, bbls NY	gal.	1.70	1.75	1.75	1.70
.63	1.05	1.00	1.01	Rapeseed, blown, bbls NY	gal.	.....	1.06	1.06	1.01
.....	.90	.82	.87	English, bbls NY	gal.	.....	.90	.90	.87
.....	.85	.76	.80⅝	Japanese, bbls NY	gal.	.....	Nom.	.88	.82
.06¾	.10	.09	.09	Red, Distilled, bbls	lb.	.09½	.9¼	.10	.09½
.....	.09½	.08¼	.08⅝	Tanks	lb.	.....	.08¼	.09¼	.08¼
.....	.50	.50	.50	Salmon, Coast, 8000 gal tks	gal.	.50	Nom.	Nom.	.50
.....	.47	.43	.45	Sardine, Pacific Coast tks	gal.	.....	.45	.45	.45
.08½	.13	.11½	.12½	Sesame, edible, yellow, bbls	lb.	.12½	.13	.13½	.12¼
.....	.14	.14	.14	White, bbls	lb.	.....	Nom.	.15	.14
.34	.40	.40	.40	Sod, bbls NY	gal.	.....	.40	.40	.40¼
.....	.09¼	.09¼	.09¼	Soy Bean, crude					
.06½	.....	.....	.....	Pacific Coast, tanks	lb.	.....	Nom.	.09¼	.09
.....	.12½	.10¼	.12	Soy Bean, crude, bbls NY	lb.	.12	.12½	.12½	.12
.....	.11	.10½	.10½	Tanks NY	lb.	.....	10½	.10½	.10½
.....	.13	.12	.13	Refined, bbls NY	lb.	.....	.13½	.13½	.13½
				Sperm, 38° CT, bleached, bbls					
.70	.85	.84	.84½	NY	gal.	.84	.85	.85	.84
.68	.82	.79	.80½	45° CT, bleached, bbls NY	gal.	.79	.80	.80	.79
				Stearic Acid, double pressed dist					
1916	.13½	.11½	.12	bags	lb.	.11½	.11¾	.12	.11
				Double pressed saponified bags					
1916	.14	.11½	.12		lb.	.11¾	.12½	.12½	.11½
1916	.15½	.13½	.14	Triple, pressed dist bags	lb.	.13¾	.14½	.14½	.13½
.07¼	.13	.08¾	.11	Stearine, Oleo, bbls	lb.	.11¼	.11¼	.11¾	.09½
.06	.09	.07½	.08	Tallow, City, extra loose	lb.	.....	.08¼	.09½	.08¾
.07	.11	.08¼	.10	Edible, tierces	lb.	.....	.10½	.10¾	.10
.09	.10¾	.08½	.10	Tallow Oil, Bbls, c-l NY	lb.	.....	.11½	.11¼	.11½
.09½	.12¼	.10	.11	Acidless, tanks NY	lb.	.....	.10½	.10¼	.10½
.....	.08¼	.07½	.07¾	Vegetable, Coast mats	lb.	.08	Nom.	Nom.	.08
.04¾	.11	.11	.11	Turkey Red, single bbls	lb.	.11	.12	.12	.11
.05½	.14	.14	.14	Double, bbls	lb.	.14	.16	.16	.14
				Whale, bleached winter, bbls					
.50	.78	.78	.78	NY	gal.	.78	.80	.80	.78
.52	.80	.80	.80	Extra, bleached, bbls NY	gal.	.80	.82	.82	.80
48	.76	.73	.73	[illegible] bbls NY	gal	.76	.78	.78	.76



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CHICAGO

General business conditions in this territory are showing signs of increasing improvement and this has been reflected in chemicals to the extent that business in this field is better than was the case in March. The greatest activity is noted in heavy chemicals and essential oils with many items in these two groups showing a good movement into consuming channels. The most important price changes of the month past have been an advance of one cent per pound each in citric and tartaric acids, reflecting the strength of the primary markets. Collections are being received in a better volume.

BOSTON

Conditions in the New England chemical business have been fairly good during the month just past. The greatest interest has centered in the upward movement of the denatured alcohol price. Large buyers of alcohol have been holding off; the jobbers and carlot buyers are not satisfied with the new arrangement of the less carlot buyer being quoted delivered prices rather than f.o.b. prices as was the custom heretofore. Aside from this activity in the heavy chemical field has been rather limited and there have not been any price movement nor is there any outstanding item of interest at the present time.

DETROIT

There has been a decided improvement on chemical conditions in this territory. The factories all seem to be doing a very nice business at the present time, which naturally means the use of more chemicals. Collections are very good.

KANSAS CITY

The most interesting item of course that has held the buyer's attention for the last two weeks, and is still holding it, is denatured alcohol. There is considerable opposition to the schedule from the buyer, and the volume of booking has not been as great as anticipated.

The paint trade is very active and for the most part operating almost to full capacity. Arsenicals are moving very slowly due to a sharp freeze recently throughout the territory. The seasonable demand for water treating chemicals is good. Collections are fairly satisfactory.

ST. LOUIS

Business conditions generally are still far from good and there are few trades which at the present time are not complaining. Generally speaking, conditions in the chemical market are not as good as they were a month ago. With the excep-

Massachusetts

Rogers & McClellan
New England Agents
Seaboard Chemical Co.
Denatured Alcohol Wood Alcohol
Methyl Acetone
Franco-American Chemical Wks.
Amyl Acetate Pyroxylin Solutions
Atlantic Carbonic Co.
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tion of very few items, the movement is not as large as had been expected. With warm weather approaching agricultural materials are moving in fairly good volume. Because of heavy rains and flood conditions obtaining in certain spots chemicals for water purification are in large demand. Linseed oil is slightly weaker. Turpentine is a little stronger than a month ago. The castor oil situation is much relieved, altho there has been no change in price and none is expected. Alcohol prices for the balance of the year show an increase over the previous market. In the face of general pessimism obtaining throughout the industry collections are only fair.

NEWARK

The situation in northern New Jersey is practically unchanged from a month ago. There is a good feeling among manufacturers and distributors and a very fair volume of business is being carried on. By comparison with the corresponding period of 1927 there is a decided improvement and it is even anticipated that the next few weeks will show a still greater demand for heavy chemicals. The unemployment situation is not unduly acute and it is felt that this territory is one of the most favored in the country at the present time.

CLEVELAND

Business in the Cleveland district is considerably better now than it was a month ago and the paint, varnish and lacquer manufacturer serving the industrial field are particularly busy at this time, some of them working over time, while some of the shelf goods manufacturers are running fairly well; others are complaining that business is not up to last year. The steel industry is running along at a very good rate with no appreciable signs of letting up. The new prices for anti-freeze alcohol have recently come out and while some contracts have been booked, a great many of the jobbers are temporarily holding off placing their business.

PHILADELPHIA

The Philadelphia chemical market is spotty; active one day and quiet the next. Naphthaline demand after being most active has slumped with the cold weather, but prices remain firm. Alkalis are quite active and the glycerine market is gradually coming out of the recent shortage and demand is still brisk. Textile and leather chemicals are quiet, but the Bleaches are getting seasonably busy. Collections are fair.

Ohio

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CALCIUM CHLORIDE
AMMONIA
STEARIC ACID

Federal Caustic Poison Act Directions

Published by Food, Drug and Insecticide Administration

Food, Drug and Insecticide Administration publishes following directions for treating personal injuries to guide those manufacturers who, under the terms of the Federal caustic poison act, are required to include such directions on the label of any substance designated in the act, when sold to the consumer for household use:

Hydrochloric Acid

External.—Wipe off the acid gently; immediately flood the surface with water, using soap freely; then cover with moist magnesia or baking soda.

Internal.—Drink a teaspoonful or more of magnesia, chalk, whiting or wall plaster, or small pieces of soap softened with water, in milk, mucilage or raw-egg white.

Call physician.

Sulfuric Acid

External.—Wipe off the acid gently; immediately flood the surface with water, using soap freely; then cover with moist magnesia or baking soda.

Internal.—Drink a teaspoonful or more of magnesia, chalk, whiting or wall plaster or small pieces of soap softened with water, in milk, mucilage or raw-egg white.

Call physician.

Nitric Acid

External.—Wipe off the acid gently; immediately flood the surface with water, using soap freely; then cover with moist magnesia or baking soda.

Internal.—Drink a teaspoonful or more of magnesia, chalk, whiting or wall plaster, or small pieces of soap softened with water, in milk, mucilage or raw-egg white.

Call physician.

Carbolic Acid

External.—Flood with water and bathe with dilute alcohol or whiskey, or a bland oil olive,(cotton seed, linseed).

Internal.—Give milk, raw egg white, mucilage, gruel or cornstarch paste, and follow with an emetic (tablespoonful of mustard in a tumbler of warm water.)

Call physician.

Oxalic Acid

External.—Wash with water.

Internal.—Give magnesia, chalk or whiting suspended in much water. Follow with emetic (tablespoonful of mustard in a tumbler of warm water).

Call physician.

Salts of Oxalic Acid

Internal.—Give magnesia, chalk or whiting suspended in much water. Follow with emetic (tablespoonful of mustard in a tumbler of warm water).

Call physician.

Acetic Acid

External.—Wash with water.

Internal.—Give magnesia, chalk or whiting in water.

Call physician.

Hypochlorous Acid

External.—Wash with water.

Internal.—Drink mucilage, raw egg white, milk or rice gruel. Follow with emetic (tablespoonful of mustard in a tumbler of warm water).

Call physician.

Sodium Hydroxide

External.—Flood with water, then wash with vinegar.

Internal.—Give vinegar or juice of lemon, grapefruit or orange copiously. Follow with olive oil.

Eyes.—Wash out with five per cent. boric acid solution.

Call physician.

Potassium Hydroxide

External.—Flood with water, then wash with vinegar.

Internal.—Give vinegar or juice of lemon, grapefruit or orange copiously. Follow with olive oil.

Eyes.—Wash out with five per cent. boric acid solution.

Call physician.

Ammonium Hydroxide

External.—Flood with water, then wash with vinegar.

Internal.—Give vinegar or juice of lemon, grapefruit or orange copiously. Follow with olive oil.

Eyes.—Wash out with five per cent. boric acid solution.

Call physician.

Silver Nitrate

External.—Wash with water, then salt solution.

Internal.—Give copious drafts of tablesalt in water, followed by an emetic (tablespoonful of mustard in a tumbler of warm water). Then administer a dose of magnesium sulphate (epsom salt) and follow with milk, raw egg or boiled starch.

Call physician.

Trade Comm. on Pumice Stone

Stipulations for abandonment of improper trade practices, entered into with a dealer in imported pumice stone, and a number of manufacturers of imitation leather is announced by the Federal Trade Commission.

Pumice stone sold in the United States is of two kinds; one kind is ground in the United States while the other is ground abroad. The domestically ground product seems to be preferred by the American trade although most of the raw product is of foreign origin.

An American pumice stone company imported the stone ground in a foreign country and sold it in this country. In its advertising the company used the word "mills." This was held to imply that the firm operated a factory, which was not the truth, and tended to make purchasers believe they were getting domestically ground pumice stone.

These practices were held by the Commission to be unfair and in a stipulation proceeding (No. 193) entered into between the commission and the pumice stone company, the latter agreed to discontinue the practices.

Seven corporations manufacturing and selling pyroxylin-coated material or imitation leather have signed a stipulation agreement (No. 192) to the effect they will discontinue trade practices tending to stifle competition. It was charged these companies made mutual understandings with the object of eliminating competition among themselves through such means as the following:

(1) Maintenance of uniform so-called "standard costing procedure" or list prices arrived at through comparison of cost data submitted by the several corporations;

(2) Adoption of uniform discounts to consumers and to jobbers or distributors, and

(3) Limiting each and all of these corporations to the acceptance of contracts calling for delivery of products over a period not to exceed 90 days.

Commission also announced a cost of production investigation covering nitrate of potash.

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PLASTOLS

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BENZYL—
AND
ETHYL
CELLULOSE

KUTTROFF, PICKHARDT & CO., Inc.
1150 Broadway, New York

Cellulose From Artichoke

(*Continued from page 504*)

work carried out up to now has had to be limited to a semi-technical scale.

Nevertheless, there is every reason to anticipate that the cost of conversion of artichokes stalks will be lower than that of wood seeing that cellulose of sliver specification has been prepared from the former material by a simplified de Vain process † and a simplified Pumilio process ‡ both of which have been shown to be more economic than the usual soda and sulphite processes.

In this connection it is of interest to refer to Raitt's observation on the cost of conversion of bamboo into cellulose, a material which, if anything, is more difficult to handle than artichoke stalks. In his paper already referred to, Raitt gave a cost of conversion of 7 pounds, 12 shillings per ton of finished cellulose from bamboo as against 10 pounds, 18 shillings from wood. A cost of conversion of artichoke stalks similar to that of bamboo brings the price of artichoke cellulose to a figure of the order of 12 pounds 12 shillings per ton as against 17 pounds 18 shillings for chemically prepared wood pulp.

The cellulose prepared from artichoke stalks by one of the methods referred to is composed almost completely of very short fibres as seen in the accompanying photomicrograph.

Not For Use In Paper

Owing to the shortness of its fibres artichoke cellulose could not be expected to replace other fibres in the manufacture of paper, except perhaps for filling purposes. On the other hand their shortness, combined with the thinness of their cellwalls, must add to the ease with which they are convertible into esters. Laboratory and semi-technical work so far carried out on the preparation of esters from artichoke cellulose has in fact revealed advantages, notably in the ease with which the resulting product could be gelatinised.

In the various directions in which artichoke cellulose has been investigated there has been nothing to show that it is inferior to a cellulose prepared from wood, apart, of course, in the case of the preparation of paper.

†J. F. Clerc: Paper from waste fibrous materials Chemical Metallurgical Engineering, February 1924.

‡U. Pumilio: The manufacture of cellulose by means of chlorine. Chemical Trade Journal, October 1921.

Societe des Usines Chimiques Rhone-Poulenc is formed in France by an amalgamation of the Societe Chimique des Usines du Rhone and the Etablissement Poulenc Freres, the former increasing its capital from 27 to 36 million francs by the issue of 90,000 new shares to Poulenc shareholders at the ratio of three Rhone shares for every four Poulenc.

Eastman Kodak Co., Rochester, announces a new continuous separator for organic preparations, which can be used to separate two immiscible or partially miscible liquids which differ in density by more than two per cent.

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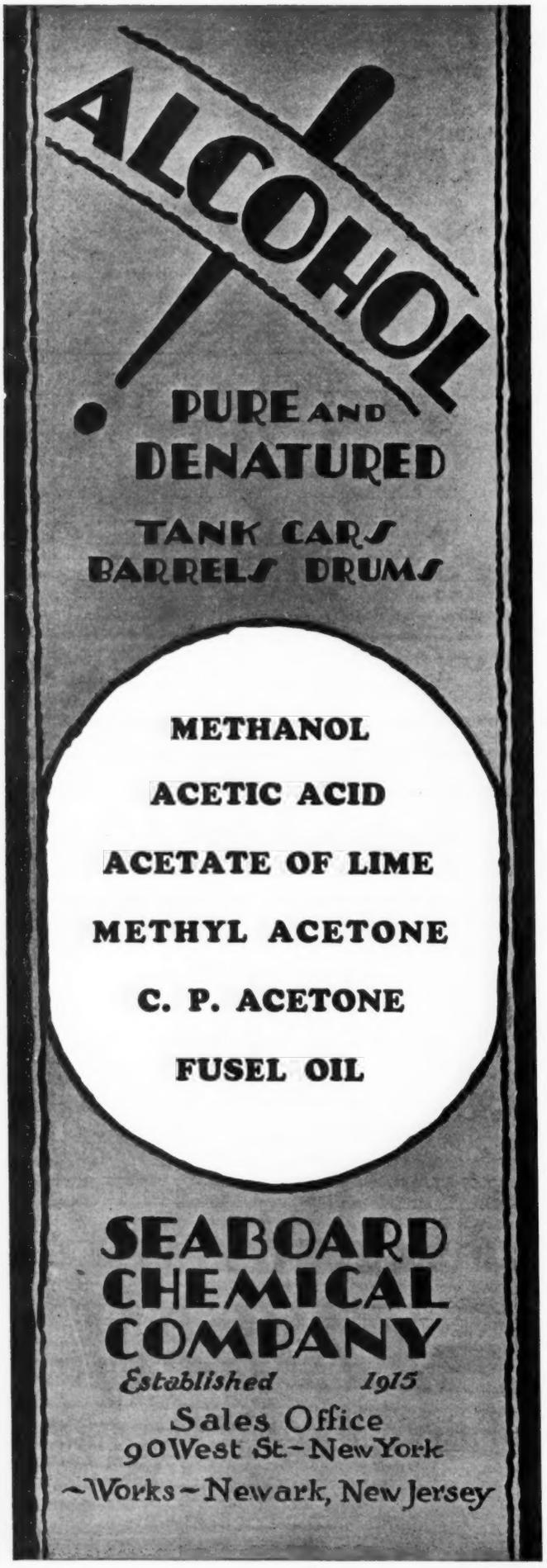

Are We Not Neglecting Less-Carlot Distribution?

(*Continued from page 512*)

The sales record of the alkali manufacturer who had the foresight to build up a demonstrating organization and establish a price on his soda to take care of sales demonstration and efficient distribution at a profit to the jobber, is a lesson for many of our chemical manufacturers to study before they go "hog wild" on price in order to get volume. That particular brand far outsells the similar products of any competitor offered at nearly one half the price but handled at a loss by every distributor who carries them.

For chemicals to be widely used, they must be readily accessible to the consumer. It is therefore of paramount importance to the manufacturer to always consider that there is a definite "cost per hundred", factor in distribution; it is likewise important for the jobber to remember that the selling price of the less carload lot has a direct bearing on the manufacturer's carload price F.O.B. factory. Both manufacturers and distributors must operate at a profit; neither can overlook the costs of the other.

New Denatured Alcohol Ruling

A recent decision of the United States Treasury Department about denaturing alcohol provides for the use of high test gasoline in place of kerosene in C. D. Formula No. 1. This decision was secured by H. S. Chatfield, vice president and treasurer, Kasebier-Chatfield Shellac Co., as chairman of the Denatured Alcohol Committee, National Paint, Oil and Varnish Assn., who an nounced it in the following letter:

"It gives me much pleasure to be able to inform you that I have been able to secure from the Treasury Department a decision regarding the denaturing of alcohol, which substitutes in C. D. Formula No. 1 high test gasoline in place of kerosene. In other words, to produce C. D. Formula No. 1, after the addition of 10 parts of methanol to each 100 parts of ethyl or grain alcohol, instead of adding onehalf of one per cent. of low grade kerosene they now can add, when requested, one-half of one per cent. of high test gasoline the same as is used in Formula No. 28A, or according to the speicfications for gasoline used by the Navy Department in their hydroplanes. This is very high test, volatile gasoline, and in my opinion as sell as the opinion of many of the larger cutters of shellac, this makes equally as good a varnish as Speically Denatured Alcohol Formula No. 1.

"I suggest that you have whoever is furnishing you with alcohol send you a sufficient quantity of this new formula for you to make tests in your business. If you find it works as well as Specially Denatured Alcohol Formula No. 1, the adoption of this formula for your requirements will eliminate the necessity of keeping records for the prohibition department, and will simplify the details of your business by doing away with the necessity of keeping records of all alcohol received and all finished products distributed. If you adopt this formula no bond will be required."

There are three large well organized mines in Sicily, which furnish three-quarters of the total annual output of sulfur, according to the Consorzio Solfifero. The remainder of the output is furnished by 384 small companies with an average annual production of 167 tons each. This would make the gross annual output approximately 250,000 tons. In the three large mines, power is furnished by electricity and costs approximately five cents per kilowatt hour. In the smaller mines, power is furnished by steam.

Sulphuric Acid

60° and 66° Commercial
66° Textile Clear Electrolyte

Prompt Shipment—Any Quantities
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Copper Sulphate

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A-cetic Acid Glacial
N-eutralized Oil
D-iamond Methyl

C-hemically Pure Acids
L-ime Acetate
I-ron Liquor
F-lotation Oils
F-ast Color Acid
S-olvents

I-ron Acetate
R-egular Methanol
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O-ils, Flotation

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Ask Me Another

1—What was the price of Phthalic Anhydride in March 1917 ?
2—What is Quillaja ?
3—Under what commercial grades is Gum Asphaltum commonly sold ?
4—Who are the American agents for Croda, Ltd. of Goole, England and for what product ?
5—Where are the plants of the Grasselli Chemical Co. located ?
6—What are industrial uses for Stannic Acid ?
7—Give the chemical name for Barytes and what is its common trade name ?
8—What is the telephone number of the following branch offices ?
(a) Du Pont, Chemical Division, Newark, N. J.
(b) General Dyestuffs Corp., Chicago.
(c) Solvay Sales Corp., Boston.
9—Can you give the address of five manufacturers of carboys ?
10—What is the duty on Sodium Arsenate ?
11—Who is the secretary and what is the address of the Compressed Gas Manufacturers' Association ?
12—Did the peak price of muriatic acid come during 1916 or 1920 ?
13—In what containers do the Dow Chemical Co. regularly supply Carbon Bisulfide ?
14—What is the boiling point of Amyl Buyterate ?
15—Do Roessler & Hasslacher have a branch office at Charlotte, N. C. at New Orleans, at Cleveland ?

In the new 1928 (Sixth Annual) Edition of

DRUG & CHEMICAL GUIDE BOOK

will be found the correct answers on the following pages:

[1, page 878, 2, p543; 3, p328; 4, p90; 5, p22; 6, p81; 7, p153; 8 (a) p729; (b) p779; (c) p755; 9, p685; 10, p925; 11, p922; 12, p897; 13, p201; 14, p128; 15, p37.]

These questions show vividly how packed with useful commercial information this invaluable, handy book is—what a variety of every day queries it answers—how many purposes it serves.

The new edition is just off the press: with two new features (1) the uses of all chemical and drug products (2) a directory of manufacturers of containers, shipping supplies, packing machinery, etc. Stoutly bound in red buckram cloth; 937 pages; price $1 postage paid delivered.

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Muscle Shoals Again

Having vetoed all bills passed by the Senate in regard to the solution of the Muscle Shoals problem, the House Military Affairs Committee proposes a substitute for the Norris resolution, which substitute, if enacted, would make of Muscle Shoals a Government operated fertilizer plant selling to farmers in competition with commercial enterprises.

The national Fertilizer Association, in announcing its plans for opposition to the pending bill, issued the following statement:

"This legislation, if enacted, would seriously disrupt a very large and fundamental industry that is highly essential to profitable farming in important sections of the country. It would retard the progress the industry is making in organizing itself following difficulties of the post-war depression, so that it can produce and sell to farmers the best and most modern fertilizers at the lowest possible cost.

"The industry's capacity is already much greater than the consumption. A disruption of the recuperative process now well underway would result if the Government comes into the business with its subsidized competition, as is provided in the House substitute.

"We feel our effort to protect our interests is entirely proper in every way and is wholly consistent with American principles of government. This is not 'lobbying.' We are speaking for ourselves as citizens and manufacturers who have lawfully built up businesses from which we make our living. We are not sending hired representatives to members of Congress with our story. We are doing this ourselves, which we construe as a common right of every American citizen."

Among the fertilizer manufacturers who have been in Washington engaged in explaining to members of Congress the effect of this proposed legislation on private enterprise are:

E. L. Robins, president, Meridian Fertilizer Factory, Meridian, Miss., and president, National Fertilizer Association; J. H. Anderson, president, Anderson Fertilizer Co., Anderson, S. C.; Horace Bowker, vice-president, the American Agricultural Chemical Co., New York; C. F. Burroughs, president, F. S. Royster Guano Co., Norfolk, Va.; John T. Burrows, manager, Rock Phosphate Dept., International Agricultural Corporation, New York; B. H. Brewster, Jr., president, Baugh & Sons Co., Baltimore, Md.; S. L. Carter, vice-president, Virginia-Carolina Chemical Corporation, Richmond, Va.; J. S. Coale, vice-president, I. P. Thomas & Son Co., Philadelphia, Pa.; George Ellis, President, Mutual Fertilizer Co., Savannah, Ga.; W. D. Huntington, vice-president, Davison Chemical Co., Baltimore, Md.; C. L. Ives, manager, New Bern Oil & Fertilizer Co., New Bern, N. C.; A. L. Ivey, attorney, Virginia-Carolina Chemical Corporation, Richmond, Va.; Charles H. MacDowell, president, Armour Fertilizer Works, Chicago, Ill.; S. J. Martenet, secretary and general manager, E. Rauh & Sons Fertilizer Co., Indianapolis, Ind.; E. H. Meadows, president, Meadows Fertilizer Co., New Bern, N. C.; W. B. Metts, secretary, Planters Fertilizers & Phophate Co., Charleston, S. C.; Gustavus Ober, Jr., president, G. Ober & Sons Co., Baltimore, Md.; E. H. Pringle, vice-president, Merchants Fertilizer & Phosphate Co., Charleston, S. C.; J. E. Sanford, vice-president, Armour Fertilizer Works, Chicago, Ill.; A. D. Strobhar, president, Southern Fertilizer & Chemical Co., Savannah, Ga.; John J. Watson, president, International Agricultural Corporation, New York; C. J. Wilson, president, Virginia-Carolina Chemical Corporation, Richmond, Va.; Lorenzo A. Wilson, chairman of the board, Wilson & Toomer Fertilizer Co., Jacksonville, Fla.

American Electrochemical Society holds fifty-third meeting at Bridgeport, Conn., April 26, 27 and 28. General subjects discussed during the session included "Electrodeposition" and "The Chemical Production of Electricity." Program also included a round table discussion on "Refractories for Electric Brass Melting." Dr. S. C. Lind, University of Minnesota, presided and also delivered an address on "The Theory of Chemical Action in Electric Discharge in Gases."

RAW MATERIAL CONTROL

Selecting of Molasses according to AMER-SOL standards for saccharine strength, affinity for yeast cultures and other factors for proper conversion into Alcohol.

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Simplified Practice for Abrasives

A simplified practice recommendation for coated abrasive products was adopted at a general conference held April 11, 1928, at the Department of Commerce, Washington, D. C., under auspices of the Division of Simplified Practice.

This recommendation provides that certain sizes and varieties of abrasive paper and cloth will be manufactured as stock items after September 1, 1928, which will, according to estimates given at the conference, care for at least 95 per cent. of the trade. The conference set the first revision date for the recommendation for July 1, 1929, and allowed until January 2, 1929, to clear the present manufactured stock, It was brought out in the meeting that the present Federal Specifications Board specification for coated abrasive products conforms with the recommendation adopted.

Manufacturers present at the conference reported the estimated annual output of this commodity as amounting to $16,000,000 and that for a number of years the number of sizes and varieties of abrasive cloth and paper has been increasing at a rapid rate. The conference generally agreed that the recommendation would prove an economic benefit to manufacturers, distributors and users alike. Letters from members of the industry who were unable to send representatives, were read for the information and guidance of the conference.

The Division of Simplified Practice will shortly circularize the manufacturers, distributors and users of the commodity for written acceptances to the recommendation, which is necessary before it can be published by the Department of Commerce as a simplified practice recommendation.

The conference went on record as favoring the appointment of a standing committee, the membership of which will be announced at a later date. This committee will be responsible for periodic resurveys which will be made to determine the degree of adherence to the recommendation; also any revisions which the adherence may show necessary.

Those attending the conference included the following: George R. Manning, of Armour & Co., Chicago; R. W. Young, of the American Glue Co., Boston; Lieutenant Commander H. N. Wallin, and H. L. Stuhmann, of the Navy Department; E. B. Gallagher, of the Clover Manufaturing Co., Norwalk, Conn.; F. E. Gallagher, of The Manning Abrasive Co., Troy, N. Y.; Harrison Starr, of The Brown Co., Portland, Maine; A. G. Bush, of The Minnesota Mining and Manufaturing Co., St. Paul, Minn.; A. J. Sidford, of Herman Behr & Co., Inc., Brooklyn, N. Y.; Albert D. Barton, of H. H. Barton & Son Co., Holmesburg, Philadelphia; E. R. Newcomb, of The Carborundum Co., Niagara Falls, N. Y.; P. W. Sawyer, of Wausau Abrasives Co.; Wausau, Wis.; George H. Halpin, of The Baeder Adamson Co., Philadelphia; William MacGregor, of The Carborundum Co., Niagara Falls, N. Y.; W. A. Babbitt, of the National Association of Wood Turners, South Bend, Ind.; and Axel H. Oxholm, of the National Committee on Wood Utilization, Washington, D.C.

Official Mexican statistics reveal an increase in the imports of sulfuric acid during 1926 to 3,430 metric tons as compared with 1,723 in 1925. The increase was due to the arrival of 1,634 tons from the Netherlands. The bulk of the remainder of the 1926 imports and practically all of the 1925 imports were supplied by the United States. The estimated output of domestic sulfuric acid during 1927 was: Cia. Mexicana de Explosives, S. A., 2,000 tons; Huasteca Petroleum Co., 6,000; Cia. Mexicana de Petroleo "El Aguila," S. A., 7,000; American Smelting & Refining Co., 5,000; Belick, Felix y Cia., 3,000 tons.

Rodman Chemical Co.'s suit against the Government claiming compensation for Federal use of company's improved methods in making activated carbon, is dismissed by the Court of Claims of the United States on the ground that the plaintiff had never had an order from the Commissioner of Patents that his invention be kept secret.

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CRYSTALS :: GRANULATED :: POWDERED

Barrels, Kegs and Subdivisions

All Citrates including

POTASSIUM CITRATE

SODIUM CITRATE

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Pure, Special and

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1927 Synthetic Resin Output Up

Production of synthetic resins in 1927 by seven firms was nearly 13,500,000 pounds, a large increase over the production in 1926, according to a survey by the U. S. Tariff Commission. In 1922—the last year for which figures were available for publication—the output was nearly 6,000,000 pounds.

In addition to the synthetic resins of the phenolic type made from phenol, cresol, and formaldehyde, a new class of resins has been produced from glycerin and phthalic anhydride. The new resins give promise of a wide application. Even greater production is looked for, as indications points to a continuance of the downward trend in prices of raw materials—phenol, formaldehyde and glycerin—with a resultant decrease in production costs. Lower production costs will, in turn, permit a more extensive application which may bring about the substitution of synthetic resins for many articles now made of wood or other material.

Following are the production and sales of synthetic resins for the the years 1922 and 1927: 1922, sales, 6,415,931 pounds, $4,315,196; production, 5,944,133 pounds, 1927, sales, 13,084,313 pounds; $6,094,656; production, 13,452,230 pounds.

Medicinals: Prior to 1914 the domestic production of coal-tar medicinals was limited to acetanilide, benzoic acid, acetphenetidin, some of the salicylates, and a few others. At that time our entire consumption of many of the most valuable and important medicinals was imported. During the war the need for a number of products became actue and several domestic manufacturers began their production.

Among the important medicinals made in the United States are:

Arsphenamine (salvarsan) and its derivatives, which are of the greatest value in the treatment of certain infectious diseases. The pre-war price of "606" (salvarsan), when this country was dependent upon Germany for its entire supply was $3.50 per ampoule. The present contract price to the Government is 18 cents per ampoule.

Barbital and luminal are important sedatives and the latter is used for the treatment of epilepsy. Products such as apothesine, butyn, butesin and tutocaine are among American developments used in modern medicine as local anesthetics.

Certain coal-tar dyes have valuable application as medicinals: For example, acriflavine and proflavine possess marked antiseptic and germicidal properties. In the treatment of wounds acriflavine and proflavine are comparatively free from irritant action on living tissues and do not inhibit appreciably the natural healing process.

In 1927, the domestic production of coal-tar medicinals was 3,599,000 pounds, while sales were 3,528,500 pounds, valued at $6,819,500. The production in 1926 was 3,696,000 pounds.

The following table shows the domestic production of some of the important medicinals:

Domestic Production and Sales in 1927 of Coal Tar Medicinals

	Sales lbs.	*Sales Value*	*Production, lbs.*
Acetanilde, U. S. P.	365,000	$112,000	367,000
Arsphenamine	355	93,760	265
Aspirin (acetyl salicylic acid)	1,721,000	1,079,000	1,716,000
Benzocaine (anesthesine)	2,900	35,600	4,000
Cincophen	85,300	405,500	84,200
Neoarsphenamine	4,360	1,180,060	3,900
Salol	65,000	53,700	51,500
Sodium salycylate	446,400	175,000	493,000
Sulfoarsphenamine	822	286,500	800
Salicylic acid, U. S. P.	1,454,000	451,200	2,619,000
O-Ditoly guanidine	1,604,000	1,145,000	1,598,000

The three important manufacturers of tri-sodium phosphate in Germany are: Chemische Fabrik Budenheim A. G. Mainz; Chemische Werke vormals H. 7 E. Albert, Biebrich on the Rhine; Gebrueder Guilini, Ludwigshafen on the Rhine, according to Commercial Attache Fayette W. Allport, Berlin. There exists a loose convention between these three concerns but no separate organization has been set up to take care of sales. It is quite likely that the administration of the sales convention is cared for by the leading producer, namely, Budenheim.

TRI SODA
DI SODA PHOSPHATE

PYRIDINE, C. P.—Tech.
ALUMINUM SULPHATE—Iron Free
ALUMINUM HYDRATE 65%
ALUMINUM SILICATE
SODIUM ALUMINATE
TRI PHENYL PHOSPHATE
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Ludwigshafen a/Rhein, Germany

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Biebrich, Germany

Chemische Werke Budenheim,
Mainz, Germany

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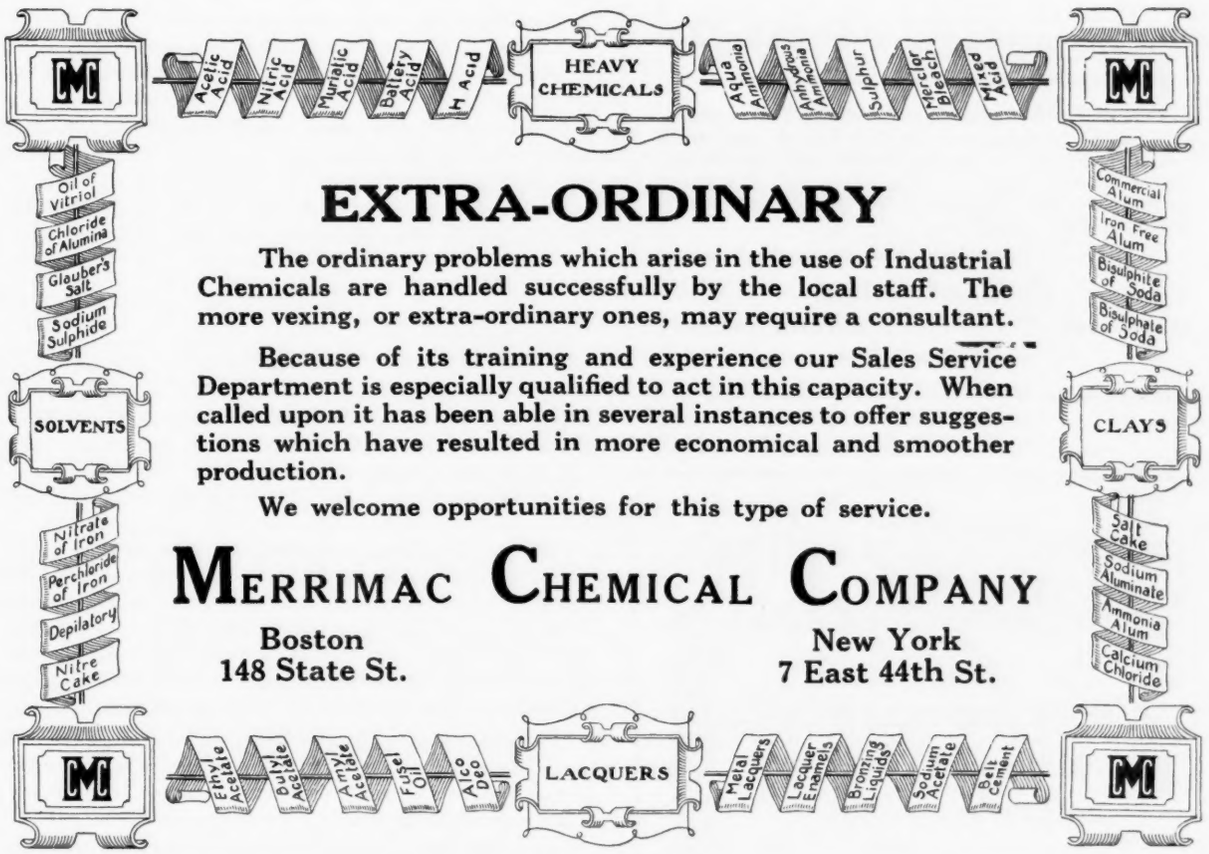

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Statement By Brown Co. President

Brown Co., Portland, Me., issues $10,000,000 cumulative six per cent. preferred stock at 95½ and dividends, to yield about 6.28 per cent.

According to the letter from H. J. Brown, president of the company, "Brown Co., founded in 1852, the largest manufacturer in this country of bleached sulfite pulp and high-grade kraft wrapping paper, has a present daily capacity of 500 tons of bleached sulfite pulp and 250 tons of kraft, bond and other papers. Company manufactures electrical conduit and does an extensive business in chemicals produced as by-products. Its research laboratory has developed special high-grade sulfite pulps which are now used in place of rag stock in high-grade paper mills and in the manufacture of rayon.

"The properties of Brown Co. located at Berlin, Gorham and Shelburne, New Hampshire, include two paper mills, two sulfite pulp mills, six hydro-electric power plants with an installed capacity of over 38,000 h. p., and steam plants with an installed capacity of 25,000 h. p. Brown Corp., a wholly-owned Canadian subsidiary, owns and operates a sulfite pulp mill of 240 tons daily capacity, located at La Tuque, Quebec, on the St. Maurice River, the output of which is shipped to the American plants.

"Timber holdings of the company and its Canadian subsidiary are over 5,800 square miles, an area substantially larger than that of the State of Connecticut and estimated to contain over 18,000,000 cords of pulpwood, sufficient for over forty-five years operations, without allowance for reforestation, growth, and purchases in the open market, which are believed to insure a perpetual supply of raw material.

"Based on the balance sheet of November 30, 1927, adjusted to show results of this financing, consolidated net tangible assets of the company and its subsidiaries available for this preferred stock were $33,680,054, or $336 per share.

"The fixed properties alone (based upon appraisals as of March 1, 1926 by prominent independent engineers and appraisers with subsequent additions at cost and with subsequent depreciation deducted) are valued at more than $74,000,000, or over $40,000,000 in excess of their net book value. At this appraised valuation net tangible assets available for this preferred stock would be $74,369,000, or $743 per share.

"Consolidated current assets as of November 30, 1927, after giving effect to this financing, were $21,979,767, or 18 times current liabilities of $1,221,573.

"Earnings of Brown Co. and its subsidiaries after all charges for maintenance and replacements have been as follows:—

	10-Year Average 1918-1927	1925	1926	1927
Profits after Income Taxes, before Depreciation, Depletion and Interest	$3,599,854	$3,412,610	$4,289,006	$4,449,989
Depreciation and Depletion	1,522,178	1,613,092	1,831,366	2,096,822
Balance Available for Interest and Dividends	$2,077,676	$1,799,518	$2,457,640	$2,353,167
Interest Paid on Bonds and Long Term Obligations	706,830	720,459	989,813	1,094,695
Balance Available for Dividends and General Int.	$1,370,846	$1,079,059	$1,467,827	$1,258,472
General Interest	324,477	441,158	276,457	225,424

"The average annual net income, after giving effect to elimination of general interest through this financing, after all charges including depreciation and depletion for the three years ending November 30, 1927, was $1,268,452, which is equivalent to $12.68 per share of preferred stock to be presently outstanding; and before depreciation and depletion, was $3,115,545, or $31.15 per share of preferred stock to be presently outstanding.

"Proceeds of this financing will be used to retire all the present outstanding preferred stock of the company and of the Brown Corp. to retire all present bank loans and to furnish funds for other corporate purposes.

"All of the common stock of Brown Co. is owned by members of the Brown family, who are officials of the Company.

German Alcohol Monopoly Profits Up

Increased profits are shown by the German Alcohol Monopoly despite smaller output last year, its annual report, indicates, the American commercial attache at Berlin advises the Department of Commerce.

According to the report, the Monopoly produced 1,700,202 hectoliters of alcohol in 1926-27, about 400,000 less than the 2,099,585 hectoliters in 1925-26. But the balance sheet shows net profits of 256,572,598 marks, against 186,154,474 in the preceding year. Net profits therefore were 70,000,000 marks, or almost $17,000,000 higher than the preceding year.

Reason for increased profits was given as considerably higher sale of alcohol on the domestic market. The distillation of corn, to make up for the short potato crop, gained from about 80,000 hectoliters in 1925-26 to 436,000 in 1926-27.

Outlook for this year is believed fair by the Monopoly. Basis of the German alcohol industry is the distillation of potatoes. Corn is only distilled supplementary to the distillation of potatoes in case the supply of potatoes is not sufficient to meet the demand. Last year's crop, although reported not up to normal, was much better than that in 1926.

The dominant firm in the French Electrochemical industry is Alais, Froges et Camargue, commonly known as "Pechiney," according to the Department of Commerce. The company is capitalized at 208,000,000 francs. Principal office is at Paris and it operates 16 plants scattered throughout the Republic. This company is the principal producer of aluminum in France and plans to materially increase its present output of approximately 20,000 tons.

In addition to electrometallurgical products, it is an extensive producer of industrial chemicals, including the following: alumina, aluminum sulfate, anhydrous aluminum chloride, potassium chloride, chlorine, hydrochloric acid, calcium hypochlorite, javel water, caustic soda, potash lyes, sulfuric acid, sulfate of iron, sulfate of copper, pure liquified sulfurous anhydride, potassium metabisulfite, magnesium chloride, magnesium sulfate, magnesium carbonate, bromine, anhydrous ammonia, liquid ammonia, ammonium sulfate, ammonium chloride, chlorates of potash, sodium and barium, potassium perchlorate, ammonium perchlorate, calcium carbide, tetrachlorethane, trichlorethylene, monochloracetic acid, aldehydes, cyclohexanol, cyclohexanon, cyclohexyle acetate, organic products obtained by synthesis and hydrogenation.

Negotiations for a special potash by-product syndicate have been renewed in Germany according to the Department of Commerce.

Proponents of the desired syndicate or cartel hope to form an organization in which the members' quotas will be determined according to their quotas in the potash syndicate. This hope is said to meet with much opposition and is declared to have been the cause of the first failure to form the proposed cartel.

This clause has been the cause of much discussion and is reported meeting with opposition for the reason that the by-products output of a number of producers does not tally with their potash syndicate quota, which would place some at a considerable advantage and others at a disadvantage, it is said.

Promoters of the plan are believed those who are thought to have little chance of success, particularly in view of a number of existing agreements whereby quotas are figured according to actual output. The leading opponents are said to be producers of chloride of magnesium.

Silica Gel Corp., Baltimore, is awarded decision by British House of Lords, in action brought by Medway Oil & Storage Co., England, alleging that a plant installed by the Baltimore company for the purifying of petroleum had proved unsatisfactory.

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New French Rosin Soap Ruling

The French Chamber of Deputies voted on March 17 in favor of a law which provides that soaps manufactured in France containing more than five per cent. of rosin, in comparison with the quantity of fats, can not be labeled as "extra" or as "pure," reports Consul Lucein Memminger, Bordeaux. Another provision of the law, however, gives satisfaction to French rosin producers by giving rosin an official status as an ingredient of soaps.

The French Naval Stores trade journal *Bois et Resineux* published an article summarizing the new law and is quoted as follows:

"We announced lately that after consultation with the president of the Soap Makers' Syndicate the French producers of rosin in the Landes ceased opposition to the proposed law for repression of frauds in the soap making industry. Since then the bill as submitted to the Chamber was passed without difficulty on March 17, 1928.

"The text of the new law interesting us especially is as follows:

"The following shall not be considered as a contravention of the law of August 1, 1905 in regard to repression of frauds:

"1. The substitution of a certain quantity of rosin for fats entering into the manufacture of soap.

"However, when the proportion of rosin exceeds five per cent. of the weight of the fats used in the soap, the sales label of the soap can not be accompanied by the words 'extra' or 'pure'.

"For the application of the disposition of Article 1 above cited, rosin acids are considered and counted as acid fats.

"2. The addition to soap stock of a composition of chlorate of sodium, sulfate of soda, or silicate of soda.

"However, in cases where the mater added contains silicate of soda the sales label must be accompanied by the mention 'silicate'.

"In our opinion the law contains good and bad so far as our industry is concerned.

"It is regrettable that soap containing more than five per cent. of rosin in proportion to the oil fats can not be labelled as 'extra' or as 'pure.'

"It is, on the contrary, very fortunate that colophanes hereafter may be officially classed as acid fats as has already been done in Germany, England, and the United States.

"On March 4 we wrote: 'Why has France so long delayed giving official status to rosin as an acid fat proper for use in soaps ?'

"We have the satisfaction of knowing that they can now be so considered, and the effects of this decision will be very favorable to the sale of colophane rosins.

"We should now undertake propaganda for encouraging its use by persuading the public that soap containing a considerable proportion of rosin is just as good if not better than so called 'pure' soap. Those who have used a well known English soap which contains 18 per cent. of rosin will agree to our claim."

Piedmont section, American Association of Textile Chemists and Colorists, holds Spring meeting at Greenville, N. C., April 14. Robert H. Stephenson was elected vice-chairman, succeeding R. W. Arrington, and Asheville selected as the site for the Summer meeting to be held on July 14 or 21.

Among those who spoke were Dr. E. W. Pierce, Ciba Chemical Corp., New York, on "Color"; Prof. Charles E. Mulllin, Clemson College, on "Some Applications of PH Control to the Cotton Industry"; and E. J. Kelly, Burkart-Schier Chemical Co., Chattanooga, who read a paper by E. L. Fletcher on "The Sulfunation of Textile Oils."

Paint, Oil & Varnish Club of Baltimore nominates following officers: president, B. G. Lehman, John T. Lewis & Bros. Co.; vice-president, Milton D. Swartz, Farboil Paint Co.; secretary and treasurer, Alfred S. Day, Spencer Kellogg & Sons, Inc.

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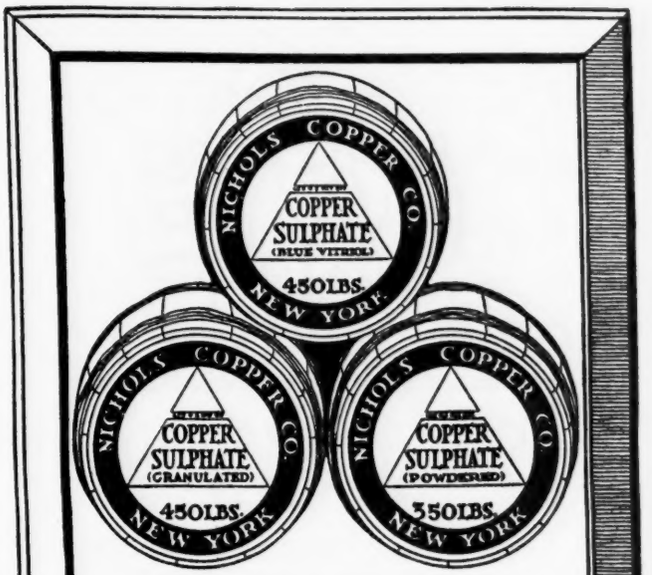

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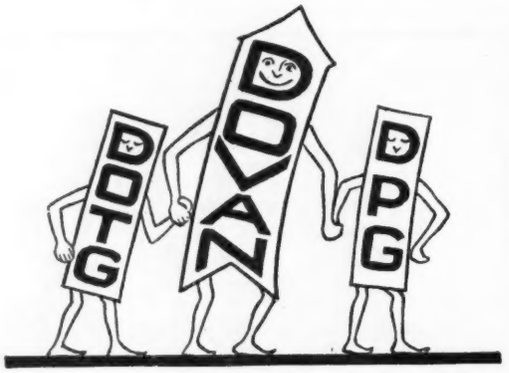

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German Sulfate Export Figures

The office of the commercial attache at Berlin reports that the best consumers for the German sulfate in 1928 were Japan, 24,490 metric tons; France, 24,264; Spain, 15,145; United States, 6,681; and the Netherland East Indies, 6,661. The revival of nitrate shipments from Chile has apparently had little effect on the German export trade in fixed nitrogen. In addition to the 126 per cent. gain in shipments of ammonium sulfate, an increase has been made in the exports of other nitrogenous fertilizers, including calcium nitrate and urea. These increased from 46,574 tons in the first two months of 1927 to 57,469 tons in the corresponding period of 1928. Over 40 per cent. of the shipments was destined to the United States, Egypt ranking second with 7,900 tons and Denmark 3,379 tons. Shipments of potassium nitrate, largely used for industrial purposes, also increased from 3,888 tons to 4,511 tons during the period under review.

I. G. Farben industrie for year ended December 31, 1927, reports gross profit of 224,300,000 marks compared with 186,100,000 marks in 1926; expenses 48,700,000 marks, against 42,100,000 marks in 1926; deductions 74,700,000 marks against 75,200,000 marks in 1926, leaving net profit of 100,800,000 marks for 1927, compared with 68,700,000 marks in 1927. Turnover increased about 20%. Capacity of rayon plants has been increased to meet growing demands, while that of nitrate plants will be enlarged to 700,000 tons annually to meet demand for fertilizers, which, owing to increasing exports, has temporarily exceeded the plants' capacity. Gasoline output from liquefied coal is growing and is easily absorbed.

American Institute of Chemical Engineers will be host to the Institution of Chemical Engineers at a combined meeting and industrial tour to be held August 18 to September 2. Complete program has not yet been announced but the tour is to begin August 18 at Quebec, proceeding thence to Shawinigan Falls, Montreal, Kirtland Lake and Port Colborne and reaching Niagara Falls for technical meetings to be held August 24 through August 26. Following meetings, tour will continue to Akron, Pittsburgh, Wilmington and Washington, on schedule enabling the party to arrive in New York by September 3, in time for meetings of Society of Chemical Industry.

Benzol Verband G.m.b.H., Bochum, Germany, concludes agreement with German American Petroleum Co., Hamburg, and Rhenania-Ossag mineral oil works, Dusseldorf. The agreement is for two years. The two last mentioned firms have agreed to take from the Benzol Verband up to 25 per cent. of its total production until December 31, 1930. Benzol Verband on its part agrees to buy 225,000 tons of benzine from the petroleum interests. Benzol Verband is to expand its sales organization so as to deal with retail sales of motor fuel.

Copeland-Silicia Gel Corp. is chartered in Maryland, with capital of 900,000 shares of no par stock, to manufacture and market domestic and commercial refrigerators. Included on board of directors of new company are C. Wilbur Miller, president, Silicia-Gel Corp. and Davison Chemical Co.; E. B. Miller, vice-president, Davison Chemical Co.; George W. Mason, Edwin H. Brown, and Merlin Wiley, all three directors of Copeland Products, Inc., Detroit, manufacturers of electric refrigerators.

Corn Products Refining Co. income account for the quarter ended March 31 shows net income after expenses and allowances for taxes of $2,714,707, as compared with $2,737,778 in the corresponding period last year. Surplus after payment of common and preferred dividends was $1,012,207, as against $1,035,278 a year previous.

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1928 First Quarter Dye Imports Up

Although imports of foreign dyes for the month of March, 1928 were nearly 7 per cent. less than for March, 1927, total imports for the quarter were 39 per cent. greater than for the first quarter of 1927, according to the Department of Commerce.

The average price per pound for the first quarter of 1928, however, is approximately 81 cents against 87 cents in 1927.

Imports of Synthetic Dyes into the United States

	1928		*1927*	
	Pounds	*Invoice Value*	*Pounds*	*Invoice Value*
January	415,156	$327,148	196,620	$186,387
February	478,407	391,351	312,277	262,364
March	378,191	316,183	404,714	352,414
Total	1,271,754	$1,034,682	913,611	$801,165

Per Cent of Dyes Furnished by Each Country

Country of Origin	*Mar. 1928*	*Mar. 1927*	*Jan.-Mar., 1928*	*Jan.-Mar., 1927*
Germany	52	40	58.5	42.2
Switzerland	34.5	42	29.3	36.6
France	2	3	1.7	3.8
Great Britain	4.5	7	2.3	6.2
Belgium	2	4	3.0	6.6
Canada	3	2	2.8	2.8
Italy	2	2	2.0	1.7
Netherland	....	..	0.4	0.1

Germany's ability to compete at the lower price average for dyes is well shown by the increase in proportion of imports of German origin. For the first quarter of 1928 Germany supplied 58 per cent. as against 42 per cent. in 1927, although the March percentage of increase is much smaller. Switzerland is losing ground as a source of supply of dyes for the United States. The percentage of Swiss dyes declined from 36 per cent. for the first quarter of 1927 to 29 per cent. for the same quarter of 1928, but the percentage for March is higher than for the quarter as a whole.

The principal producers of ammonium nitrate in the United States are firms engaged primarily in the manufacture of explosives. The consumption by explosives manufacturers of material produced in their own establishments was 31,773 short tons in 1923 and 31,119 tons in 1925 according to reports of the Bureau of the Census. In addition, there were produced by chemical manufacturers 1,581 tons in 1925. Post war importations of ammonium nitrate were especially heavy during the period 1920-1923, averaging over 15,000 tons annually. The 1927 receipts were 5,609 tons of which Norway supplied 3,287 and Germany the remainder. A table showing the imports into the United States during 1914 and for the past 10 years follows:

Imports of Ammonium Nitrate into the United States

Fiscal-Year	*Pounds*	*Value*
1914	2,765,728	$132,849
Calendar Year		
1918	77,101	4,813
1919	509,208	34,630
1920	28,476,593	2,141,580
1921	50,163,622	3,091,675
1922	23,969,568	1,195,549
1923	19,919,016	1,298,105
1924	3,747,531	209,399
1925	10,871,929	541,672
1926	8,353,106	383,405
1927	11,218,060	450,587

Interstate Commerce Commission suspends from April 26, 1928, until November 26, 1928, the operation of certain schedules as published in Supplement 46 to Agent J. E. Johanson's tariff, I. C. C. No. 1744. Suspended schedules propose to increase the rates on coconut, copra, cottonseed, peanut, solidified cottonseed and soy beans oils, carloads, from Texas common point territory to Baltimore, from 79½ to 84 cents; and to Boston, from 87½ to 92 cents per hundred pounds.

The establishment of a Bureau of Scientific Research for the Province of Manitoba has been approved by a subcommittee of the Industrial Development Board. Aims of the bureau will be to ascertain how scientific research can best aid the development of resources and industry, and to direct such research. Principal problems will include separation of base metals sulfides and the extraction of lithium from ore.

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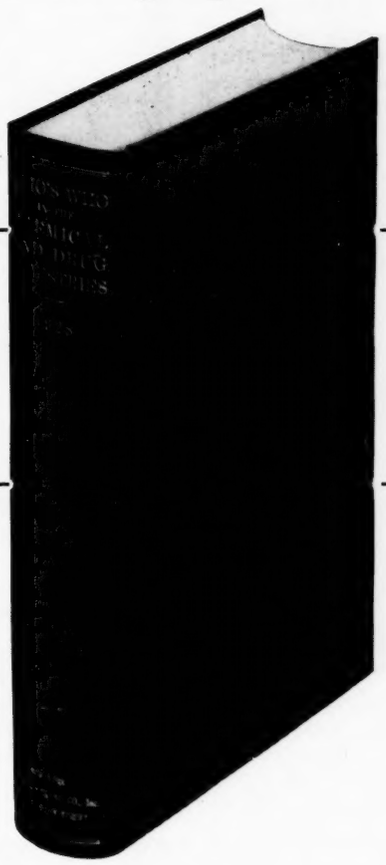

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Japanese Calcium Cyanamide Makers

The Japanese rights for manufacturing calcium cyanamide under the Frank-Caro process were acquired in 1908 by Messrs. Fujiyama and Noguchi, according to Assistant Trade Commissioner Howard B. Titus, Tokyo. A small plant was built at Sogi, Kyushu. This plant was in operation until 1911, when Fujiyama discovered a cheaper process. The method was registered in Japan, patent No. 20730, and since that time the Nihon Chiso K. K. have manufactured cyanamide under this patent. The Mitsubishi Shoji Kaisha is largely interested in this firm, of which Noguchi, one of the original buyers of the Caro process rights for Japan, is president, and Fujiyama is one of the directors. Fujiyama further perfected his system for manufacturing cyanamide in 1913 (Japanese patent No. 25557). The Electro Chemical Co. of Tokyo acquired the second patent. The firm of Mitsui is largely interested in the Electro Chemical Co. A law suit which lasted some ten years was instituted by Mitsubishi against Mitsui, claiming that this second patent was an infringement of the first, but the courts held that such was not the case, and both processes are now in use in Japan by the respective holders of the patents.

The total production of cyanamide in Japan during 1927 is stated to have been 180,000 tons. It contained 20 per cent. nitrogen and sold at 90 yen per ton, wholesale. Of the 180,000 tons of cyanamide produced in 1927, only 25,000 tons was used as a direct fertilizer.

Small quantities of cyanamide are imported into Japan, the imports for 1926, the last year for which figures are available, having been 2,800 tons. The cyanamide which is not sold for fertilizer is converted into sulfate of ammonia, some 155,000 tons having been converted in 1927, with a loss in bulk of approximately 10 per cent.

The present production of cyanamide, by companies, is estimated as follows:

Electro Chemical Co. (Mitsui)	120,000 tons (2d Fujiyama patent)
Daido Fertilizer Co.)	
Hokuyetsu Hydroelectric Co.)	
Kanto " ")	12,000 " " " "
Nippon Chiso K. K. (Mitsubishi)	10,000 " " " "
Nitro Fertilizer Co.	25,000 " " " "
Kokuryku Hydroelectric Co.	7,000 " " " "

It is possible for the Nippon Chiso K. K. (Mitsubishi) to manufacture 80,000 tons of cyanamide per year, but this company is at present using most of the power generated by their plant for the production of sulfate of ammonia by the Casale system, their production being about 68,000 tons per annum. The plant of this company is located at Sogi, Kyushu, the original plant started for the production of cyanamide by the Frank-Caro process

American Cyanamid Financial Outlook

Production and sales of principal products of American Cyanamid Co. in the fiscal year ending June 30, 1928, are shown to be running from 35% to 100% ahead of last year, making new high records for the business, according to "The Wall Street Journal." As a result, the current year should be the most profitable the company ever has had.

The following table shows output in tons of the principal products in the past six years with 1928 estimated:

	Crude Cyanamid	Fertilizer Cyanamid	Ammo-Phos	Cyanide
1928*.....	136,068	89,003	53,196	14,687
1927.....	93,008	47,444	38,179	14,366
1926.....	118,381	82,343	22,796	14,127
1925.....	90,245	68,048	14,022	13,471
1924.....	81,024	58,902	3,289	14,600
1923.....	68,313	49,169	6,132	13,464

*Estimated.

Production of crude cyanamid is approximately 46% ahead of 1927 production; fertilizer cyanamid production has nearly doubled, accompanied by a susbtantial price advance; and production of Ammo-Phos has increased roughly 35%. Obviously with a 46% greater volume in its basic product, and a considerably better scale of prices, net profit this year should reveal a substantial gain over 1927. Volume in the basic product materially reduces costs on the by-product. Net profit last year was $1,356,231, equal after preferred dividends to $3.09 a share on the 329,715 shares of common stock, against $1,652,240 or $4.01 a share earned in the preceding year.

The following table shows changes in earnings and balance sheet in the past three years:

	1927	1926	1925
Net sales.....	$11,594,617	$12,518,441	$9,516,214
Net income.....	1,356,231	1,652,240	1,149,904
$ a share.....	3.09	4.01	*11.47
Plant account.....	8,975,898	10,065,301	8,650,040

*On 65,943 shares old stock.

Capital consists of $5,595,900 6% preferred, 65,943 shares Class A stock, and 263,772 shares of Class B stock, a total of 329,715 shares of common which share alike with exception of the fact that the Class A carries voting power. The old common stock was split into one share of Class A and four shares of Class B in 1925.

Class B stock is selling at 47, against a high of 50⅜ and a low of 38½ this year. It pays $1.60 annually.

Whereas the exports of ammonium sulfate by Germany and the United Kingdom during the first two months of 1927 registered phenomenal increases, the trade of the United States suffered a decline of over 50 per cent., when compared with the trade during the corresponding months of 1927. The export position of the three countries has been set up in the following table, by the Department of Commerce:

Ammonium Sulfate Exports

Exported from	*Jan.-Feb. 1927* *Long tons*	*Jan.-Feb. 1928* *Long tons*
United States.....	33,859	15,757
Germany.....	47,084	(a) 106,310
Great Britain.....	19,567	54,400

(a) 1928 includes reparations material, 1927 exclusive of reparations.

Wage agreements in German chemical industry, due to expire March 31, have been extended to March 31, 1929, subject to certain agreed increases. For the majority of workers, the increase is equal to seven pfennigs per hour, while to some it means an increase of 9½ per cent.

House Committee on Mines and Mining holds hearing, April 25, on the Winter bill (H. R. 496) authorizing an appropriation of $50,000 annually for five years for the development of the potash industry jointly by the Geological Survey, Department of the Interior, and the Bureau of Mines, Department of Commerce. James H. Hedges, assistant director, Bureau of Mines, testified that the smallness of the increase in the price of imported potash since the World War is due in large measure to the fact that the United States has given evidence of its intention of developing a domestic potash industry. He also testified that the Geological Survey and the Bureau of Mines could give deffinite assurance that the research work proposed would be productive of results.

United States Tariff Commission is considering an application for an investigation of the wood flour industry with a view to increasing present duty of 33⅓ per cent. ad volarem, under section 315, tariff act of 1922. Commission has not ordered an investigation, but is making preliminary survey of the domestic industry and the imports with a view towards ascertaining whether the present situation justifies a detailed investigation and a report to the President.

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Mathieson 1928 Prospects Bright

During the past four years the Mathieson Alkali Works has made large expenditures for plant rehabilitation and while the benefits from these improvements were to some extent reflected in the report for last year, it is confidently expected that the final showing for 1928 will be somewhat better than the results from operations obtained in 1927, says "The Wall Street News." Net income for 1927 was $1,832,916 equal after preferred dividends to $11.60 a common share.

In a little more than five years Mathieson has been made over from an old-line chemical concern into one of the most aggressive now engaged in the industry. Through its research department new products have been developed and increased earnings have been derived from this source. It is felt that further benefits will accrue when the expansion program is finally completed toward the close of the current year.

Although Mathieson has spent about $6,000,000 in remodelling its plants a very conservative policy has been followed in capitalizing this new construction. Only $2,000,000 has been added to the book values of the structures. Naturally charge-offs to operating expenses have been rather heavy. Approximately $12 a share annually has been taken out of current earnings since 1924. Last year a depreciation charge of $840,000 was made, making the depreciation reserve at the close of 1927 $5,626,829. Plants, buildings and equivalent were carried in the balance sheet at $18,722,070 and at $13,025,241 after allowing for the reserve.

The capital structure of Mathieson Alkali is a good one. There are only 24,750 shares of 7% cumulative preferred and 147,027 shares of common stock outstanding. Current dividends now being paid 7% on the preferred and $6 on the common, call for an annual outlay of only $1,055,412. After a surplus appropriation of $567,000 for the retirement of preferred stock, the free surplus at the close of last year was $5,400,000, or the equivalent of over $36 a common share. The ratio of current assets to current liabilities was better than three to one.

Exports of caustic soda from the United Kingdom during 1927 increased 25 per cent. over the previous year while shipments from the United States declined two per cent., according to the Department of Commerce. During the first two months of 1928, the British trade continued its upward trend while the shipments from the United States were approximately four per cent. less than those of the first two months of 1927. German shipments in 1928 appeared to be materially higher than in 1927 which is partly accounted for by the fact that the trade figures for 1928 include reparations material. The position of the three countries is shown in the following table:

	Jan.-Feb. 1927	*Jan.-Feb. 1928*
	Pounds	*Pounds*
United States	18,482,000	17,777,000
Germany	1,709,000	6,651,000
Great Britain	36,575,000	46,058 000

Buffalo Foundry and Machine Co. acquires assets, physical properties and patents of the Chemical & Vacuum Machinery Co. The Buflovak and Buflokast lines of dryers and evaporators will be supplemented with several new types. These include the spray film feed, applicable to both vacuum and atmospheric drum dryers; a new design of vacuum rotary dryer and several other modifications of present types. Charles O. Lavett, former general manager, and H. E. Neubauer, former chief engineer for the Chemical & Vacuum Machinery Co. are now associated with the Buffalo Foundry & Machine Co.

South-Central section, American Association of Textile Chemists and Colorists, holds Spring meeting at Hotel Patten, Chattanooga, April 28. Featuring the meeting was a moving-picture illustrating the manufacture of dyestuffs.

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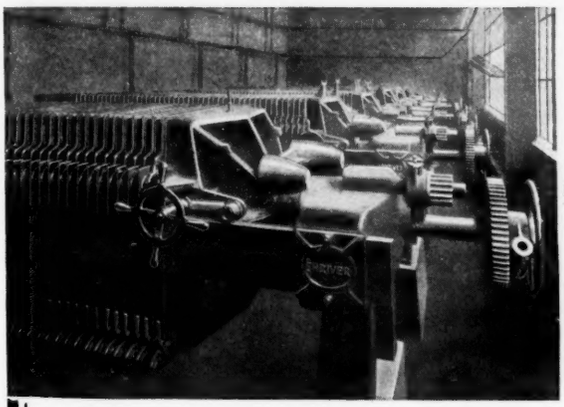

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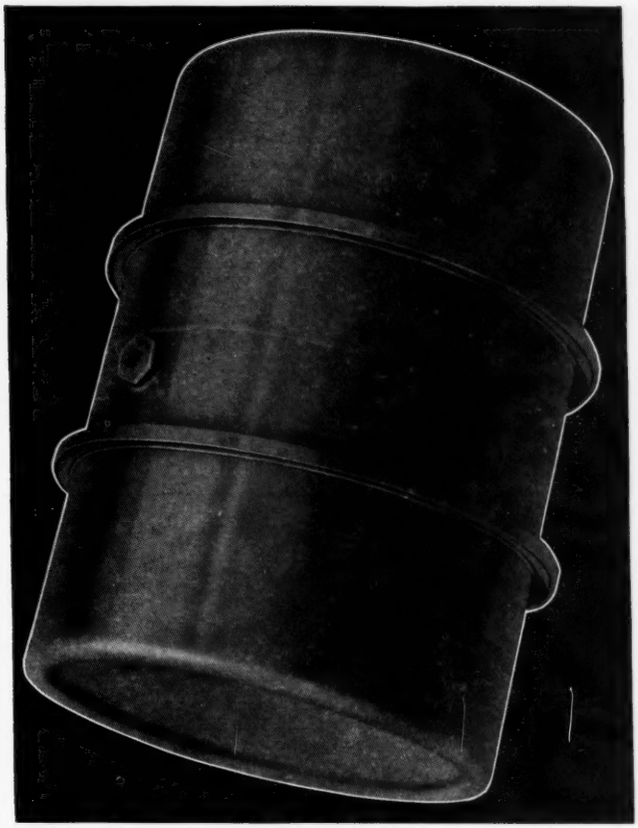

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Of Chemical Markets, published monthly at Pittsfield, Mass., for April 1, 1928, State of New York, County of New York—ss.

Before me, a notary public in and for the State and county aforesaid, personally appeared Williams Haynes, who, having been duly sworn according to law, deposes and says that he is the Publisher of the Chemical Markets, and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management (and if a daily paper, the circulation), etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, embodied in section 443, Postal Laws and Regulations, printed on the reverse of this form, to wit:

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Seal.)

Dye Cartels Reach Agreement

A preliminary agreement has been reached between the French-German-Swiss dye cartel and the Italian dye-explosives cartel, the latter including Italgas and Montecatini, according to the Department of Commerce.

This agreement, it is said, establishes quotas on dye imports into Italy based on 1927 totals, the quotas from the three countries being as follows: Germany, 70 per cent.; France, 20 per cent.; Switzerland, 10 per cent. It is further understood the explosives import arrangement is practically the same as the foregoing dyestuff understanding. It is stated the agreement is not yet signed, but it is understood to be operating tentatively.

The foregoing is in line with the creation of an international chemical cartel covering all of Europe, and is the first indication that Italian interests have joined this understanding, which is making rapid progress and is speedily consolidating its position throughout continental Europe under the leadership of Germany.

Dispatches indicate that the Swiss and French pharmaceutical interests had entered into a general agreement which follows, as part of the general scheme of events, the original dyestuffs agreement between Germany and France.

Phosphate deposits in mountain caves, the product of long centuries of habitation by swallows, bats and other animals, have been open to exploitation for fertilizer production, says a report from Vienna. Three notable caves have lately been explored, according to Franz Kirnbauer, an engineer resident in Roumania. These are the Dragon's Cave and the Czoklovina Cave in Austria, and Minerva Cave in France. The first two have already yielded 25,000 tons of phosphatic earth. The latter estimated to contain 120,000 tons, has not yet been exploited.

Large deposits of potassium nitrate, valued at $280-$400 per ton, have been discovered about 150 miles east of Alice Springs, Central Australia, according to reports.

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Commercial Solvents Corp. has been running its Terre Haute plant since March 1, maufacturing butyl acetate. This plant was shut down last September.

The immediate result of this production has been practically to stop shipments of German butyl acetate into the United States with a corresponding benefit to Commercial Solvents in a larger domestic market. German shipments into this country in March were one-sixth of shipments in February. This makes the second German product which has been shut out of the United States by the low cost of Commercial Solvents plants, the other being methanol.

Commercial Solvents main product is butyl alcohol. There are also a number of smaller manufacturers of butyl acetate, who make the product from butanol and sell it to smaller lacquer manufacturers.

So long as these manufacturers can offer it at a price low enough to shut out foreign competition, it is not the policy of Commercial Solvents to compete, but whenever the demand reaches a proportion sufficient to make prices high enough to attract foreign shipments, Solvents plans to enter the market. For this purpose a large inventory will be made and kept on hand at the Terre Haute plant. This will have the effect of stabilizing prices and will be of benefit to all consumers.

The decline in imports of butyl acetate from Germany is shown in the following table of imports in the past six months:

October	435,000 lbs.	January	436,000 lbs.
November	532,000 lbs.	February	576,000 lbs.
December	438,000 lbs.	March	96,000 lbs.

Commercial Solvents has made further substantial progress this year towards cutting costs through development of valuable by-products. This, coupled with the largest demand from the automobile industry on record, indicates net profits in the first half of this year should be the largest on record by a substantial margin.

Profits from by-products now are running at the rate of $1,000,000 to $1,250,000 annually, an income that did not exist two years ago.

Income from the sale of corn oil and corn oilmeal, which comes in for the first time this year, is next to methanol as the largest by-product producer of revenue. Formerly it was necessary to leave the germ of the corn intact to help the fermentation process but research has developed a new method that makes this unnecessary and makes it possible to use the corn germ for the production of oil.

Commercial Solvents now has the largest dry degerminating plant for corn in the world. Corn oil will be sold in the open market in tank car lots. The company is the second largest consumer of corn in the country, coming next to Corn Products.

In the past three years extraordinary progress has been made by the research departments of the company in developing new products which reduce costs. Prices on the principal products of the company in three years have been reduced 40% (adjusted to fluctuations in corn prices) while the margin of profit has been kept the same. By a long process of cross breeding, the efficiency of the bacteria which cause the fermentation have been increased and they have been made more disease resistant. About $300,000 a year is spent on research.

Sales of acetone, are increasing, particularly to manufacturers of artificial silk, and this field seems to offer important possibilities. Less important derivatives are butyl pthallate, butyl aldehyde, diacetone alcohol, butyl sterate, and butyl tartrate which have a large variety of chemical uses.

Sales of these products doubled from 1925 to 1926 and doubled again from 1926 to 1927, indicating the increased industrial demand.

The research department is working on fermentation processes similar to the butyl process for the manufacture of other products. There is a large potential field and good prospects that valuable products will be discovered.

The new plant at Peoria now is about three times the size of the Terre Haute plant and is sufficient to take care of present demands, leaving the older plant to make butyl for the manufacture of by-products and derivatives.

Commercial Solvents in 1927 earned $2,012,874, or $9.25 a share on 217,772 shares of no-par capital stock, against $1,707,791, or $7.84 a share earned in 1926. The capital stock is selling around 178, against a low of 153½ this year and a high of 189½.

Belgium's chemical industry continued to make rapid progress during 1927, states Consul General George S. Messersmith, Antwerp, in a report made public by the Department of Commerce. Production is increasing but there is also a considerable trade in the re-exportation of chemical products imported from certain European countries, particularly Germany.

Sulfuric acid was the principal industrial chemical product exported in 1927, shipments totaling 182,630 metric tons, as compared with 142,730 tons in 1926. Exports of sodium carbonate were 1,703 tons as compared with 1,040 tons in 1926, of hydrochloric acid 5,703 tons as compared with 7,916 tons the previous year and of copper sulfate 12,090 tons in 1927, a decrease from 13,895 tons in 1926. Re-exports of sulfate of potash showed a decrease and fell from 14,252 tons in 1926 to 6,165 tons in 1927.

Exports of sulfate of soda increased heavily and rose from 12,409 tons in 1926 to 20, 133 tons in 1927, while shipments of caustic soda advanced from 1,554 tons in 1926 to 2,719 tons in 1927. Shipments of chloride of lime amounted to 4,505 tons in 1927, as compared with 3,585 tons in 1926.

Egyptian Salt and Soda Co., a corporation controlled largely by British capital, holds a concession to exploit the mineral deposits of Wadi Natron oasis which is situated 120 kilometers southwest of Cairo, according to Vice Consul Edward P. Lawton, Jr., Cairo. The area known as Wadi Natron covers 100,000 acres, and until recently reached only by camel, is now served by a narrow gauge railway. The company's products include caustic soda, soda ash, crude natron and salt. The lakes from which these materials are obtained are probably the oldest known sources of natural soda in the world. Approximately 10 tons of natron are extracted daily but it is estimated that production could readily be increased to from 500 to 1,000 tons per day without appreciable effect on the deposits. A more detailed description of the deposits and the chemical plant is available to interested American firms upon application to the Chemical Division.

The United States is one of the largest producers of fish meal and scrap, the production being estimated at 75,000 to 90,000 tons annually, mostly scrap for fertilizer, according to the United States Department of Commerce.

It is only since the war that fish waste and unsalable fish have been converted into fish meal fit for animal consumption instead of into fish scrap, which is utilized only as a fertilizer. Trade information bulletin 538, recently issued by the department, gives a short history of the industry, the kinds of fish used and classes of fish meal made, the methods of manufacture in the more important countries, the international trade and other information. Copies are available at any district office of the Bureau of Foreign and Domestic Commerce at 10 cents each.

Industrial Alcohol Manufacturers' Association changes name to The Industrial Alcohol Institute, Inc.

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"WE"—Editorially Speaking

At a time when the problems of marketing chemicals are as acute as they are to-day it is natural probably that the articles in our April issue on various phases of chemical distribution should have brought a greater tangible response from our readers than any recent issue. The subjects that moved our readers to comment, pro and con, often very vigorously, were Mr. Burnett's discussion of the place of the local distributor in the economics of chemical merchandising and Mr. Peterkin's definition of the purchasing agent's position in a buyer's market.

The local distributor is always a debateable personage, and when Mr. Burnett likened him to the women with whom man can neither live with nor without, he expressed what from our recent correspondence we take to be a very sober truth. Out in the middlewest, G. S. Robins, a strong, aggressive, intelligent, local distributor has been prompted to expand a thought that was touched on briefly by Mr. Burnett, and to set forth in detail the various items of cost not directly connected with selling, which are a part of the distribution of chemicals. We are very glad to publish his article because we believe that the expenses connected with storing, repacking, delivering, financing, and risking are apt to be forgotten in the consideration of the distribution problem. Competition so focuses itself at the point of sale that many an executive has come to think of selling and distributing as identical terms, a mistake that is furthered by the tremendous sales pressure put upon the industry by overproduction. But goods must be delivered as well as sold and the money for them must be collected. These tasks may be assumed by the manufacturer or carried by the local distributor, but they must be done, and to shift the distributing plan without full appreciation and due consideration of all these expenses is courting trouble. For this reason the dollars and cents aspects of these necessary distributing functions, as set forth by Mr. Robins, are particularly pertinent at this time.

"What is the current price for a first class murder? If it is not too high I am not sure," so the president of an important chemical company told a group of his associates at lunch the other day, "that this is not the cheapest and the quickest way out of the chemical industry's problem's." He added that he could check off half a dozen sales executives whose straining for volume threw askew the entire foundation of the chemical market.

"You could probably get cut rates for a wholesale job in Chicago," said one of his competitors.

And so we warn any chemical association against a convention which may be proposed for the Illinois city.

Quite seriously, there are other solutions of the problem, and Mr. Abbott, who will be remembered in chemical circles as having been director of sales research for National Aniline during the War, has laid out a campaign which is directed against the buyer rather than against the seller.

The chemical industries' raw materials are changing radically. New products from coal, from carbide, from petroleum, from water, and the air are being produced and marketed with astonishing and disconcerting rapidity in a way that is changing fundamentally the basis of many chemical processes. Among these new raw materials cellulose is looming larger than ever. Its historic use in paper making increases almost daily and the production curves of both lacquers and rayon mount steeply each year. With diminishing forest areas, if the statement of agricultural experts that cotton in a very few years will be an uneconomic crop in our southern states east of the Mississippi, the cellulose problem has naturally attracted a good deal of attention. At the Chemical Round Table at the Williamstown Conference two summers ago a deal of interested curiosity was aroused by the reports of experiments in growing artichokes as a joint source of sugar and cellulose. It is with a great deal of satisfaction that we print in this issue a description of this work written by the distinguished chemist who has been in the forefront of these developments.

As a sort of supplement to the discussion of distribution problems in the April number we have carried over a consideration of the most effective use of salesmen's territories. In any sales organization this is always one of the very knotty practical questions which the executive must answer satisfactorily. At the very heart is an apparent conflict of interest. The sales manager wants intensive cultivation of a sales area with every possible prospect worked and every possible order secured. The salesman, on the other hand, is out to make a showing, and naturally, prefers to hit the high spots, as it were, calling on the best prospects for good sized business, and thus in a given time and given number of calls, rolling up as large a personal sales score as possible. The arrangement of salesmen's territories is, therefore, a diplomatic as well as a commercial problem. It must always be considered from personal points of view, and happy is that organization where an *esprit de corps* exists which carries selling effort forward on the basis that what is best for the company is surely—if not always obviously—for the best of all the men working for it.

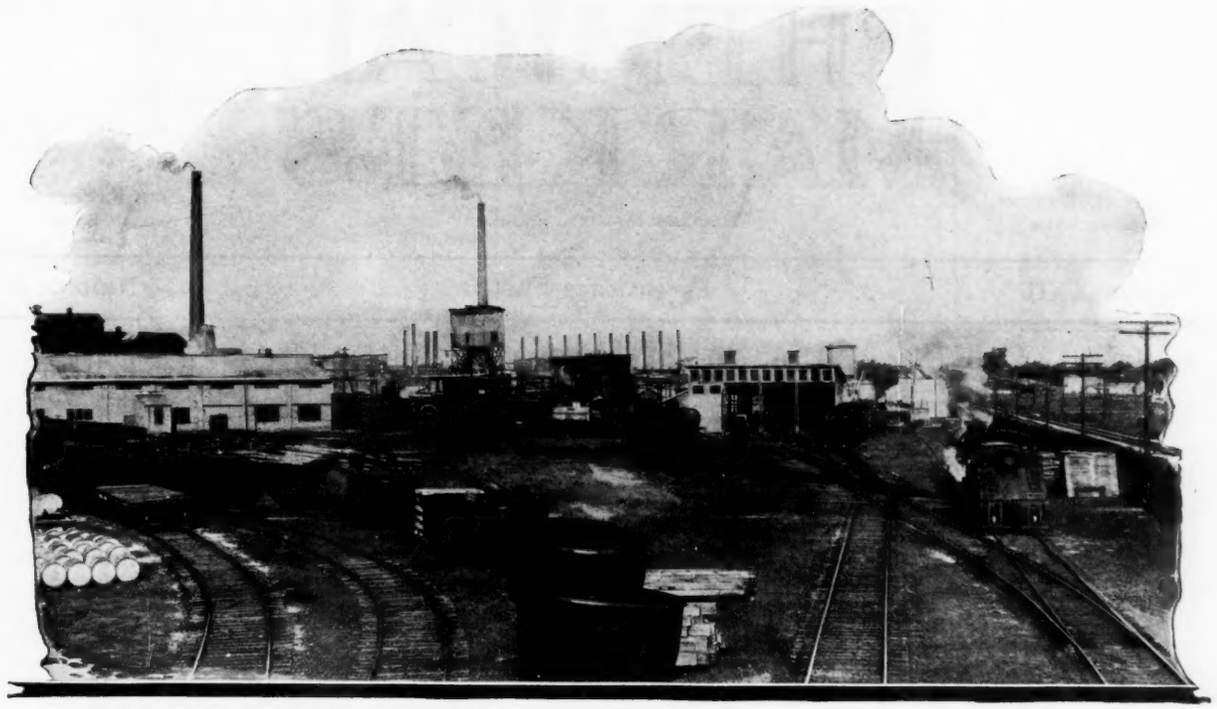
JUNE FEATURES

We all know that the Governments' attitude towards business has changed materially since 1920. What does this change mean to the chemical industry? There are no group of industries more closely connected with the government: no group of products more regulated, more controlled, more administrated, more legislated about than chemical products, and in the June issue some of these changing legal aspects will be authoritatively discussed.

There was a benzol damage suit recently in Baltimore which established some interesting principles regarding the responsibility of shippers of dangerous chemicals in the case of accident. One of the attorneys in this case will review this subject.

Since the War taxes have become a real factor in business administration, and remembering the changes in our excess profits and corporation tax rates it is pretty well established that Congress has not yet agreed as to the form of business taxation which will be permanent. The economist of one of the big New York banks contributes an article on a proposed ideal taxation plan.

Other subjects which will be discussed are the Government's Attitude Toward Big Business; The Chemical Effects of the Prohibition Law, and the Legal Relationship of the Chemical Plant to the Community in Which It Is Established.



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